Does CEO cultural heritage affect performance under competitive pressure?

DOES CEO CULTURAL HERITAGE AFFECT PERFORMANCE UNDER COMPETITIVE PRESSURE?*

Duc Duy Nguyen
University of St Andrews, The Gateway, St Andrews, KY16 9RJ, UK

Jens Hagendorff
Cardiff University, Aberconway Building, Cardiff, CF10 3EU, UK

Arman Eshraghi
University of Edinburgh, 29 Buccleuch Place, Edinburgh, EH8 9JS, UK

This version: 15 December 2016

Abstract

We exploit variation in cultural heritage across CEOs who are children and grandchildren of immigrants to demonstrate that the cultural origins of CEOs matter for corporate outcomes. Following shocks to industry competition, firms led by CEOs who are second- or third-generation immigrants are associated with a 6.2% higher profitability than the average firm. This effect weakens over successive immigrant generations, is not detected for top executives other than the CEO, and can be explained by specific cultural values that prevail in the CEO's country of origin. Our paper offers novel insights on the interactions between informal institutions and corporate outcomes.

JEL Classifications: G30, M14, Z1
Key words: CEOs; Cultural values; Competition; Performance; Corporate investments

*Authors: Nguyen ddn2@st-andrews.ac.uk, Hagendorff hagendorffj@cardiff.ac.uk, Eshraghi arman.eshraghi@ed.ac.uk. We are grateful to Andrew Karolyi (the editor) and an anonymous referee for very helpful comments and suggestions. We thank our discussants Christine Brown, G. Nathan Dong, Min Jun Kang, Jillian Popadak, Vijaya Subrahmanyam, and Chendi Zhang. We also thank Ken Ahern, Effi Benmelech, Alon Brav, Barbara Casu, Robert Davidson, Elisabeth Dedman, Angelica Gonzalez, Christo Karuna, S.P. Kothari, Piotr Korczak, Ivan Lim, Romie Littrell, Frank Liu, Hamid Mehran, Ron Masulis, Kristian Myrseth, Linh Nguyen, Trang Nguyen, Jeroen Nieboer, Neslihan Ozkan, Bill Rees, Klaus Schaeck, Ben Sila, and Francesco Vallascas as well as participants at the 2016 FMA Annual meeting in Las Vegas, the 2016 Research in Behavioral Finance Conference, the 2016 Edinburgh Conference on Legal Institutions and Finance, the 2016 EFMA meeting in Basel, the 2015 Federal Reserve Bank of New York/JAE Conference on the Economics of Culture, the 2015 FMA Consortium on Activist Investors, Corporate Governance and Hedge Fund, the 2015 FMA meeting in Venice, the 2015 BAFA meeting in Manchester; and seminar participants at Bristol, Glasgow, Lancaster, and St Andrews and for helpful comments. All errors remain ours.

There is a growing literature demonstrating that the individual 'styles' of CEOs matter for corporate policies. While recent research provides insights into the heterogeneity in managerial styles with reference to a CEO's physiology (Adams, Keloharju and Knüpfer, 2016) and life experiences (Bernile, Bhagwat and Rau, 2016; Crongvist and Yu, 2016; Dittmar and Duchin, 2016; Schoar and Zuo, 2016), there is limited attention on the role of culture in shaping CEO behavior and its resulting effects on corporate outcomes. This is partly due to the challenges in measuring 'culture'. The impact of culture (irrespective of how defined) on economic outcomes is easily confounded with economic and other institutional factors that, much like culture, can vary across countries.

The empirical setting in this paper is designed to address this challenge. We hand-collect a novel dataset that tracks the family trees of US CEOs and focus on CEOs who are the children or grandchildren of immigrants (*Gen2-3* CEOs, henceforth). While Gen2-3 CEOs are exposed to the same legal, social and institutional influences as other US-born CEOs, they possess a cultural heritage that is different from those of other CEOs. Specifically, the cultural preferences and beliefs of Gen2-3 CEOs are likely to bear the cultural mark of the countries that their parents or grandparents have emigrated from. In this paper, we test whether the cultural values prevailing in the country that a Gen2-3 CEO's ancestors originate from shape firm policy choices and performance in a changing industry environment.

To study the impact of culture on economic outcomes, it is central to understand how a person's cultural values are formed and transmitted. Some studies posit that cultural attitudes adapt quickly to changes in economic incentives and opportunities. For instance, Gruber and Hungerman (2008) show that when the opportunity costs of religious participation increase, church attendance and donations drop sharply. Others argue that cultural values are deeply

rooted and change slowly over time (Glazer and Moynihan, 1963). For instance, several studies document that the descendants of immigrants show a degree of cultural distinctiveness over several subsequent generations (e.g., Fernandez and Fogli, 2009; Giavazzi, Petkov and Schiantarelli, 2015; Guiso, Sapienza and Zingales, 2006). In line with the latter view, our paper documents distinct behavior among Gen2-3 CEOs and offers an explanation based on cultural heritage.

To identify a CEO's cultural heritage, we hand-collect data on the country of origin of a CEO's ancestors from *ancestry.com* – the world's largest genealogy database with access to almost 17 billion family histories. Our main approach, as described in detail in Section 1.1, maps out a CEO's family tree. Specifically, we search for a CEO's family records to identify information about their parents which we then use to identify their ancestors. We search census records as well as birth and marriage certificates and other publicly available information to accurately track a CEO's ancestral history as well as whether s/he is a Gen2-3 CEO.[1] This fine-grained dataset enables us to construct precise tests of the role of CEO cultural heritage on firm outcomes.

To identify the effect of CEO's cultural heritage on firm outcomes, we employ a methodology similar in spirit to Opler and Titman (1994) and Yonker (2016). Our research design exploits competitive shocks at industry-level that are unanticipated by both the CEO and the firm. This allows us to circumvent ambiguity over whether CEOs imprint their preferences on a firm or whether CEOs and firms match on unobserved factors. The basic idea is that an industry shock forces the CEO to make decisions to navigate the firm through a changing

[1]We use a strict procedure to ensure that our ancestry data are reliable. For instance, we require that a CEO needs to have both paternal and maternal ancestors originate from the same country and migrate to the US the same number of generations ago. Encouragingly, this is the case for the majority of CEOs in our data, with 85% of CEOs have ancestors marrying individuals of similar ancestral heritage. To account for any self-selection arising from retaining CEOs with clearly identifiable ancestral information, we base our regressions on a Heckman two-step procedure.

industry environment. The ensuing decisions are likely to be complex, non-routine and unstructured and CEO characteristics therefore likely to be salient in how CEOs respond. If the cultural heritage of a CEO maters to corporate outcomes, we should observe systematic post-shock differences across firms led by CEOs with different ancestry.

As a source of competitive shocks, we use the Interstate Banking and Branching Efficiency Act (IBBEA) of 1994 which legalizes interstate branching across the US and markedly increases competitive pressures in some US states (see Cornaggia et al., 2015; Rice and Strahan, 2010). Our identification relies on the staggered (and unanticipated) deregulation of interstate branching applicable to banks in individual US states. IBBEA therefore introduces substantial variation in industry competition along both geographical and temporal dimensions. Given this setting, our empirical analyses focus on the banking industry. However, the implications of our findings are also applicable to non-banks.

Our analysis of how a CEO's cultural heritage shapes firm policy choices and performance under competitive pressure is built on three blocks. First, we document a detectable performance effect linked to Gen2-3 CEOs, implying that these CEOs behave differently from the population of CEOs. Specifically, when competition intensifies, banks led by Gen2-3 CEOs exhibit a 6.2% increase in return on assets compared with banks led by Gen4+ CEOs. Intriguingly, when examining the different generations of immigrants that a CEO belongs to, we observe a monotonic reduction in bank performance under competitive pressure as we move from CEOs who are second-generation descendants of immigrants to later generations. Further, the Gen2-3 effect we document is uniquely linked to the CEO and cannot be detected for other senior executives, such as the CFO or other members of a bank's top management team.

Second, we demonstrate that the descendants-of-immigrants effect is rooted in culture (rather than other characteristics shared by Gen2-3 CEOs). To do so, we trace the performance effect linked to Gen2-3 CEOs back to specific cultural values that prevail in the country of a CEOs' ancestors. Using a broad range of 16 cultural dimensions obtained from Hofstede, Hofstede, and Minkov (2010), Schwartz (2007), GLOBE and the World Value Survey (WVS), we find that most cultural dimensions (10 out of 16) explain competitive performance.

The cultural values that enter significantly appear to broadly contrast group- vs. self-oriented cultures and cultures related to attitudes towards uncertain future outcomes. Specifically, we find that competitive performance is positively related to the cultural dimensions *Restraint, Long-term Orientation, Uncertainty Avoidance*, and *Harmony* and is negatively related to *Individualism, Performance-orientation, Importance of Freedom, Intellectual Autonomy, Importance of Selflessness,* and *Patriotism*. Our findings are consistent with the leadership literature which considers group-mindedness and foresight as desirable managerial traits (e.g., Den Hartog et al., 1999) and links short-termism to unsustainable investment behavior and poor long-term prospects (e.g., Marginson and McAulay, 2008; Porter, 1992).[2] The economic magnitudes of most cultural variables are substantially larger than the descendants-of-immigrants effect (Gen2-3) on competitive performance. Again, this confirms our interpretation that culture is the key driver behind the Gen2-3 effects.

[2] Given the large number of cultural dimensions we examine, interpreting each individual dimension becomes a complex undertaking. Further, the results on the individual dimensions suggest that some cultural dimensions cluster to represent more general characteristics of different cultural heritages (e.g., the group-mindedness of a culture). Therefore, we employ a factor analysis, a common empirical approach to identify multifaceted personalities and traits (e.g., Adams, Akyol, and Verwijmeren, 2016; Custodio, Ferreira, and Matos, 2013; Kaplan, Klebanov, and Sorensen 2012; Kaplan and Sorensen, 2016), and assign the 16 cultural variables to more general sets of cultural characteristics. We find that the 16 individual dimensions can be grouped into 3 factors. The first factor contrasts self-oriented with group-oriented values, the second factor contrasts empowered with hierarchical values while the third factor is related to assertiveness and autonomy. We obtain similar interpretation when linking the three factors (instead of the 16 individual dimensions) to competitive performance.

In contrast, the cultural dimensions *Importance of Income Equality, Humane-orientation, Trust in Others, Power Distance,* and *Masculinity* do not explain competitive performance. These dimensions mainly revolve around values reflecting hierarchy vs equality which, intuitively, should be less relevant to strategic decision-making and firm outcomes.

The final set of tests offers direct evidence on the culture-performance nexus. We show that a CEO's cultural heritage affects performance by shaping the strategies CEOs undertake. Specifically, we find that when competition intensifies, banks led by CEOs whose ancestral origins lie in cultures that emphasize restraint, group-mindedness and long-term orientation (i) engage in fewer acquisitions, (ii) realize higher acquisition announcement returns, (iii) display lower risk, and (iv) are more cost efficient. Since cultural heritage effects can be traced to more granular policy choices, it offers an explanation for why culture matters to performance.

We rule out several alternative interpretations for our findings. First, we address identification concerns related to endogenous CEO-bank matching. Unobserved firm heterogeneity may simultaneously explain the matching between banks and Gen2-3 CEOs as well as bank policies. Our IBBEA identification already partially mitigates this issue. Since banks will not know ex-ante whether and when a state opens to interstate competition[3], they cannot plausibly appoint CEOs in anticipation of this event. We present two additional tests to show that endogenous CEO-bank matching is unlikely to drive our results. We first compare CEOs who assume office at least three years before a state opens for deregulation (these appointments are plausibly exogenous to performance post-deregulation) with CEOs who assume office within three years of deregulation. We do not find any difference in the effect of

[3] We construct several validation tests to ensure that the IBBEA shock is indeed unforeseen by individual banks and CEOs. For instance, we employ the methodology of Bertrand and Mullainathan (2003) and examine the dynamics of bank profitability and risk-taking surrounding the period of deregulation. We find that there is no prior trend in bank profitability, which confirms the validity of the shock.

CEOs on performance depending on how long before IBBEA CEOs were appointed. We then use a set of exogenous CEO turnovers (those arising from CEO death, illness or long-planned retirements) and confirms that Gen2-3 are linked to an increase in competitive performance.

Second, deregulation may not affect all banks within the same state uniformly. For instance, out-of-state banks may be more likely to open new branches in local areas with the most growth potential, and if banks located in these areas were headed by Gen4+ CEOs, our results may simply reflect the fact that these banks face stiffer competition. We address this by showing that our results are robust to controlling for county-year fixed effects. This set-up allows us to compare banks located in the same county and year (which are likely to share the same customer base, face the same investment cycle and local competition) but have CEOs with different ancestral backgrounds.

Finally, we address concerns that omitted variables at the level of the CEO, bank location or a CEO's country of origin explain our results. In additional tests, we control for various CEO characteristics (including demographic, career history and pay incentives), county-level variables (population, labor force, income per capita, and religiosity) and institutional and economic variables in a CEO's ancestral country of origin (GDP per capita, life expectancy and the legal system). Our results remain robust to including these controls.

Our paper contributes to several active research areas. First, our paper is related to the growing literature that studies the impact of CEO attributes on corporate outcomes. Bertrand and Schoar (2003) identify significant time-invariant 'managerial styles' in a range of policy choices. Various studies have subsequently attempted to explain heterogeneity in managerial styles with reference to a manager's physiology (Adams, Keloharju and Knüpfer, 2016), life experiences (Bernile, Bhagwat and Rau, 2016; Crongvist and Yu, 2016), or career experience (Custodio and

Metzger, 2013; Dittmar and Duchin, 2016; Schoar and Zuo, 2016). Our findings make an important contribution to this line of research, because they can be interpreted as evidence pointing to some of the *origins* of time-invariant manager heterogeneity.

Second, our findings are consistent with the hypothesis that culture is slow-moving and that the effects of cultural heritage are more pervasive than previously reported in a literature that links cultural heritage to personal choices such as labor force participation or family planning (e.g., Fernández and Fogli, 2009; Giavazzi, Petkov and Schiantarelli, 2015; Giuliano, 2007). Our study implies that the effects of cultural heritage go beyond personal decisions and affect entire organizations through their effects on various firm-level policies.[4]

Finally, we document distinct behavior among CEOs who are second- and third-generation immigrants, offer an explanation for this based on cultural heritage and show that this effect fades away over successive generations. We do so by collecting a unique dataset that maps out the family trees of CEOs using detailed genealogical data. Collectively, our paper therefore offers novel insights into the formation and persistence of an individual's cultural preferences (e.g., Bisin and Verdier, 2000, 2001; Robalino and Robson, 2013).

1. Data and identification

1.1 Bank sample and CEO ancestry information

Our paper studies how a CEO's cultural heritage shapes the way banks react to the staggered liberalization of interstate branching since the 1990s. We build a sample of publicly-listed US banks between 1994-2006 by matching data on commercial banks and bank holding company call reports (forms FFIEC 031/041 and FR Y-9C) with market data from the Center for Research

[4] In a related study, Pan, Siegel and Wang (2016) find that uncertainty avoiding CEOs are less likely to undertake acquisitions. This is consistent with our paper where we link various cultural variables, including uncertainty avoidance, to the firm's acquisition propensity.

in Securities Price (CRSP). We choose this sampling period because 1994 is the first year in which states were allowed to introduce regulatory barriers and 2006 is one year after the last regulatory change was enacted. We then complement this sample with data from ExecuComp, BoardEx and Edgar DEF14A forms to retrieve a range of demographic information on CEOs. This yields a sample of 939 CEOs serving 726 US banks.

To obtain data on the ancestry of CEOs, we proceed as follows. Our main source of ancestry information are Census Bureau records accessed via ancestry.com, the world's largest genealogy database. The exact approach we use to identify ancestral information depends on when a CEO was born.

Since the latest publicly available Census Bureau records stem from the 1940 census[5], we can retrieve ancestry information for all 209 CEOs born before 1940 directly from census records. Census records contain detailed demographic information on all members of a household (including names, birth dates and places of birth). We start by locating a CEO's census records to obtain information on their parents (and their respective places of birth). If both parents are born outside the US, we classify a CEO as a second-generation immigrant from the country in which their parents were born. If either parent is born in the US, we continue to locate earlier census records of a CEO's parents to identify the CEO's grandparents. If the CEO's grandparents are born outside the US, the CEO is classified as a third-generation immigrant from the country in which his/her grandfather is born. Otherwise, we continue our search using earlier census records as far back as data availability permits, usually to the mid-19th century.

For the 730 CEOs born after 1940 (about 78% of the sample), we use two approaches to collect ancestry information. The first approach relies on the fact that since all the parents of

[5] The US Census Bureau conducts a population count every 10 years in years ending with a zero. However, in order to protect the privacy of those who are alive, the census records are only made publicly available for viewing 72 years after the original census day.

sample CEOs are born before 1940, their census records are accessible. If we know the names of a CEO's parents (via ancestry.com or other public sources), we can map out the parents' family tree and locate their ancestors using the same technique we use for CEOs born before 1940 (as describe above). To do this, we search ancestry.com for a CEO's birth and marriage certificates which occasionally list the names of parents.[6] If we cannot identify a CEOs parents this way, we search a CEO's biographies, interviews, or obituaries for information on their parents.

When we cannot identify the parents of a CEO, we use a second approach that lets us infer ancestry information where this information cannot be directly sourced from census records. Specifically, we can infer a CEO's heritage if all families with the same surname as the CEO and live in the birth county of the CEO have immigrated to the US from the same country and the same number of generations ago.

The following example illustrates this approach. Say, we search for ancestors of a CEO with the surname Pantilione who is born in 1945 in Cumberland County, New Jersey[7]. To do this, we search Census records for all Pantilione families that live in Cumberland County, N.J. in 1940. Census records indicate that two families with the surname Pantilione live in Cumberland County in 1940 and that both families emigrated from Italy at about the same time. Therefore, it is reasonable to assume that the CEO will be born to one of these two families in 1945 and is of Italian ancestry.[8] Crucially, if we were to discover inconsistencies regarding a CEO's origins (e.g., one Pantilione family emigrated from Italy and one from Poland or the families arrived in

[6] The richness of information in birth or marriage certificates varies significantly across the county and state.
[7] We identify a CEO's birthplace from various sources, including ancestry.com's School Yearbooks, Marquis Who's Who, NNDB.com, LinkedIn, or through extensive Google searches of public data sources.
[8] This strategy relies on some assumptions. First, the CEO's family does not move house between 1940 and 1945. Second, there is no new arrivals with the same surname moving to Cumberland County between 1940 and 1945. We latter show that our results are robust to restricting the analyses to CEOs born before 1940. The pre-1940 data rely on information directly obtained from census records.

the US in different generations), we remove that CEO from the sample to maintain a high level of precision when identifying cultural heritage of CEOs.

In total, we are able to find ancestry information for 406 out of 730 CEOs born after 1940. Combined with the 209 CEOs born before 1940, this gives us a sample of 615 CEOs. In subsequent sections, we expand this detailed collection of ancestry data to other senior executives to test whether the cultural heritage effects are extended to non-CEO executives.

Throughout the paper, we restrict our sample to CEOs where the paternal and maternal ancestors originate from the same country and migrate to the US the same number of generations ago. This ensures that the cultural heritage of CEOs is clearly identifiable. CEOs of mixed ancestry may have inherited values from both cultures or from a single culture, depending on cultural and personal factors we cannot observe. Fortunately for our analysis, cross-cultural intermarriages were not common amongst 20th century immigrants (e.g., Kalmijn, 1999; Pagnini and Morgan, 1990). Fewer than 15% of CEOs are classed as mixed ancestry. In unreported tests, we also find that mixed-ancestry CEOs are not associated with any performance difference under competitive pressure, consistent with the notion that these CEOs do not inherit a cultural heritage that is distinct from the CEO population.

A major advantage of our approach is that it provides precise information on the immigrant generation and origin of the CEO's ancestors. Several contemporaneous studies (e.g., Du, Yu and Yu, 2016; Pan, Siegel and Wang, 2016) rely on surnames to infer ancestral origin which is a noisier approach. For instance, a person with the surname Welch could come from Britain, Ireland or Germany. The flipside of targeting such a high level of accuracy in determining a CEO's heritage is that we lose 44% post-1940 CEOs whose heritage we cannot identify precisely. To account for potential self-selection, we base all our regression models on a

standard Heckman two-step procedure (1979). This procedure ensures that our conclusions regarding CEO heritage and other factors that drive bank performance are not driven by unobservable factors that make sample inclusion more likely.[9]

1.2 Identification: Competitive pressures in the US banking sector

To study how a CEO's cultural heritage effects firm outcomes, we employ a methodology similar to Opler and Titman (1994) and Yonker (2016). The basic idea is that causality is identified through a series of unexpected shocks at industry-level that force a CEO to act. Since the ensuing decisions are non-routine, complex and unstructured, CEO characteristics such as cultural heritage are likely to be salient in shaping how firms respond to a changing industry environment.

We use the staggered liberalization of interstate branching in the 1990s, which introduces an unexpected and significant increase in industry competition at the level of individual states as shocks that are unanticipated by banks (see Cornaggia et al., 2015). Before 1994, interstate branching is largely prohibited and there is almost no out-of-state bank branching. The Interstate Banking and Branching Efficiency Act (IBBEA) of 1994 allows unrestricted interstate banking and interstate branching across the US from 1997. IBBEA leads to an exponential growth of

[9] The first step of the Heckman procedure estimates the probability that banks are included in our sample using data on banks included as well as banks we are unable to include in our sample due to data restrictions. Identification rests on the exclusion restriction that requires the first stage to be estimated using a set of variables that is larger by at least one variable than the set of variables in the second stage. Because CEOs with longer surnames are more likely to be uniquely identified (e.g., Pantilione vs. Mike), the length of the CEO's surname affects the likelihood that this CEO is included in the sample. Therefore, we use the length of the CEO's surname as an additional variable that is included in the first but not the second stage. At the same time, this instrument is plausibly exogenous to bank performance (the correlation between the length of a CEO's surname and bank ROA is -0.03 and is statistically insignificant). The first-stage results are shown in Appendix 3. The second stage of the Heckman procedure (as shown in the tables in this paper) include *Lambda* which contains information from the first step to control for unobservable factors which make sample inclusion more likely.

banking activities across state borders. While there are only 64 out-of-state banks in 1994, this number increases to 24,000 by 2005 (Johnson and Rice, 2008).

Our identification strategy relies on a unique feature of IBBEA: the ability of individual US states to block competition by adopting barriers against deregulation any time between the passage of IBBEA in September 1994 and its effective date in July 1997. Further, some US states continue to revise their branching barriers until 2005, providing further variation in competitive pressures. The key advantage of our identification is that different states enact the roadblocks at different points in time, which gives us multiple competitive shocks that vary across states and time. Further, this decision is made at state level and cannot be anticipated by individual banks and the CEO. Therefore, this offers an experimental setting to gauge how CEOs react to changes in competitive pressures that are exogenous to the bank that they work for (Rice and Strahan, 2010).

Specifically, IBBEA grants US states the option to: (1) impose a minimum age of three years on target institutions of interstate acquirers; (2) not to permit de novo interstate branching; (3) not to permit the acquisition of individual branches by an out-of-state bank; and (4) block out-of-state banks from acquiring an in-state bank that holds more than 30% of the deposits in that state. We define a state to be competitive if it chooses *not* to adopt either (3) or (4). This is because the requirements on age and de novo interstate branching can be easily circumvented or their effects are subsumed to those of (3) and (4) (Johnson and Rice, 2008).[10] Appendix 1 lists all changes by state and year.

[10] Column (6) of Appendix 9 shows that our results remain robust to using all four roadblock provisions.

2. Empirical results

2.1 Difference-in-Differences test: Baseline specification

Our empirical strategy adopts a difference-in-differences (DiD) method to analyze how a CEO's cultural heritage affects a bank's reaction to a shock in industry competition. This approach exploits (1) within-state variation in a CEO's cultural heritage across banks and (2) across- and within-state variation in competitive pressures across time.[11] The latter is exogenously created by the adoption of roadblocks to interstate competition permitted under IBBEA (Cornaggia et al., 2015; Rice and Strahan, 2010). Our main outcome variable is Return on Assets (ROA).[12]

The following example illustrates our empirical approach. Consider two identical banks – Bank 1 and Bank 2 – both headquartered in New York in 1996. Bank 1 has a Gen2-3 CEO while Bank 2 has a Generation4+ CEO. The state of New York decided against adopting roadblocks to interstate branching on 6 January 1997 exposing both banks to a sudden increase in industry competition. This allows us to relate post-shock performance differences across these banks to the cultural heritage of a CEO. In addition, our identification also utilizes Bank 3 and Bank 4, which are both headquartered in California, one with a Gen2-3 CEO and one with a Generation4+ CEO. Crucially, California does not experience an increase in competition in 1997. Therefore, Banks 3 and 4 absorb the general economic conditions as well as differences that are specific to banks led by CEOs of a certain cultural heritage.

We control for several bank and CEO characteristics. First, we control for the size of the bank using the natural logarithm of the book value of total assets. Since the size distribution of US banks is highly skewed, we also include its square term, Ln (asset)^2, to account for possible

[11] Column (7) of Appendix 9 shows that our results remain robust to using an alternative specification that only exploits within-state variation.
[12] Several recent studies (e.g., Ellul and Yerramilli, 2013) use ROA as a proxy for bank performance. Our results are also robust to other market and accounting measures of bank performance (see Section 5.4).

non-linearity between the bank size and performance (see, Ellul and Yerramilli (2013)). Further, we control for heterogeneity in banks' balance sheets using the ratios Deposits/Assets, Loans/Assets and Liabilities/Assets. We use stock volatility to control for bank risk and the Herfindahl-Hirschman index (HHI) of deposits by state and year to control for state-level concentration of banking activities. Finally, we control for CEO characteristics by including the natural logarithm of the CEO age and tenure, as well as their square terms. This is to account for the non-linearity between CEO career horizons and his/her behavior (see, for instance, Custodio and Metzger (2013)). Our result is robust to controlling for several additional measures of CEO unobserved and observed heterogeneity. Table 1 reports the summary statistics.

[Tables 1 & 2 around here]

Before conducting our multivariate analysis, we confirm that the assignment of banks to competitive and non-competitive states is random (as indicated by the two groups not being significantly different). We compare the characteristics of the treatment group (banks located in states that eventually liberalize interstate branching) to the control group (banks located in non-competitive states) in the fiscal year before treatment takes place (i.e. a state liberalizes interstate branching). Panel A of Table 2 shows that there are no statistically significant differences in bank performance (ROA), bank risk (measured by stock volatility and leverage) or the distribution of Gen2-3 CEOs across treatment and control banks. Further, treatment and control banks are also similar in terms of other key control variables (size, lending, deposit, CEO age and tenure).

Next, we check whether the parallel assumption holds in our sample of treatment and control banks. The parallel assumption states that in the absence of treatment (deregulation), the coefficient on the DiD estimator is zero. Thus, it requires a similar pre-event trend for both

treatment and control groups. Panel B of Table 2 calculates the growth rates in bank profitability (ROA) and bank risk (leverage and stock volatility) one- and two-years prior to shocks and find no statistically significant differences between treatment and control banks. This suggests that the parallel trend assumption is likely to hold. In the multivariate regressions, we further control for pre-trends in the data by including state-year trends fixed effects.

2.2 Multivariate results

Next, we perform DiD tests in a multivariate framework. We estimate the following model:

$$ROA_{itk} = \alpha + \beta_1 \text{Gen2-3 CEO}_{it} * \text{Competitive state}_{tk} + \beta_2 \text{Gen2-3 CEO}_{it} + \beta_3 \text{Competitive state}_{tk} + \text{Controls} + \text{Fixed effects} + \varepsilon_{itk} \quad \textbf{(1)}$$

where *t* indexes time, *i* indexes banks and *k* indexes US states. The dependent variable is ROA. *Competitive state* is a dummy that equals 1 if the state does not block key dimensions of interstate branching between 1994 and 2005 under powers granted following the passage of IBBEA (see Section 1.2 for more details on those powers). Our coefficient of interest is the interaction term β_1, which tells us how the profitability of banks with Gen2-3 and Gen4+ CEOs differs under the two different competitive regimes.

Our controls include bank and CEO characteristics as described in Section 2.1. We also control for Gen1 (i.e., foreign-born) CEO to ensure that the coefficients on Gen2-3 estimate the performance difference of second and third generation immigrants relative to later generation immigrants. Various types of fixed effects are included in the models (such as firm, state-year trends, and county-year fixed effects). We also account for the interactive effects of regulatory changes on bank performance by including interaction terms between competitive state and all

controls in our model.[13] Standard errors are double-clustered by bank and year to account for temporal and cross-sectional correlation (Petersen, 2009).

[Table 3 around here]

Table 3 indicates that Gen2-3 CEOs exert a detectable performance difference relative to other CEOs, implying that these CEOs behave differently from the CEO population. The interaction term between Gen2-3 CEO and competitive state is positive and statistically significant at the 1% level. When competition increases, banks led by CEOs who are the children or grandchildren of immigrants exhibit a 6.2% increase in ROA compared to an average CEO. The magnitude of Gen2-3 is therefore higher than that of important controls such as deposit funding or state-level (HHI) competition (each about 3%). Further, the coefficient on Gen2-3 picks up the aggregate effect of Gen2-3 CEOs on bank performance. The economic magnitudes become even more pronounced when we directly link specific cultural dimensions to performance in the sections below.

In contrast, the coefficient on Gen2-3 is negative and significant. While an F-test in Panel B confirms that the net effect of Gen2-3 CEOs under competitive pressure is indeed positive and statistically significant, our results suggest that the qualities of Gen2-3 CEOs that link to superior performance when state-level competition increases also link to underperformance under less competitive market conditions. We revisit this finding later and explain it based on cultural values that prevail in the CEO's ancestral country of origin.

Our findings hold under different fixed effect models. We sequentially add state and year fixed effects (column 1), state-year fixed effects (column 2) to absorb all variables that do not vary across banks within a given state and year (e.g., investment opportunities or business cycles), state-year trends fixed effects (column 3) to control for pre-trends in the data, county-

[13] For brevity, we do not report the interaction terms between competitive state and the controls in the tables.

year fixed effects (column 4) to control for within-state omitted factors, and firm fixed effects (column 5) to control for time-invariant firm-specific factors. Finally, column (6) replicates the model in column (1) but excludes the inverse Mills ratio.

2.3 Inter-generational transmission of culture

We next analyze whether the effect that CEOs have on performance varies according to how many generations ago a CEO's ancestors arrived in the US. The previous literature indicates that the values of successive generations of immigrants slowly converge to US values (see, for example, Giavazzi, Petkov and Schiantarelli, 2015). This suggests that the effects we document above should be stronger for earlier generation of immigrants compared with higher generation immigrants. Table 4 reports the results.

[Table 4 around here]

In line with this expectation, we observe a monotonic decline in the magnitude of the effect that CEOs have on performance when moving from first-generation to fourth-generation immigrant CEOs. While Gen1, Gen2, and Gen3 CEOs are associated with a significant and positive performance under pressure, the coefficient estimate for Gen1 CEOs is larger than that of Gen2, which in turn is larger than that of Gen3 CEOs.[14] This positive effect disappears when we examine Gen4 CEOs.

2.4 The cultural heritage of non-CEO top executives

[14] We are cautious when interpreting the positive coefficient on Gen1 CEOs as due to cultural heritage. Since Gen1 CEOs are born outside the US, they differ from second- and later-generation CEOs in more than just their cultural heritage. Gen1 CEOs experience different economic, social and legal influences which makes it difficult to attribute the observed performance effect of Gen1 CEOs to cultural heritage.

In this section, we examine whether the performance effect linked to Gen2-3 CEOs extends beyond the CEO. Recent studies show that top executives other than the CEO matter for some firm outcomes. For instance, Dittmar and Duchin (2016) find that the professional experience of the CEO and the CFO each have distinct effects on a firm's financial policies. Pan, Siegel and Wang (2016) document commonalities in the risk attitudes of a firm's top management team and show that risk attitudes within the top management team shape a firm's risk taking.

To test whether the cultural heritage of non-CEO top executives explains how banks react to an increase in competition, we collect data on the cultural heritage of the four highest paid non-CEO executives across *all* banks. We obtain the name, age, tenure and total compensation from ExecuComp (for S&P 1500 banks) and from Edgar DEF14A forms (for smaller banks).[15] To identify the ancestral heritage of non-CEO top executives, we employ the same data collection approach we use for CEOs (see Section 1.1). In total, we are able to locate the ancestry information for 2,462 out of 3,416 executives in office between 1994 and 2006.

[Table 5 around here]

Our regression specifications focus on three groups of non-CEO executives: (1) The second-highest paid executive; (2) the CFO, and (3) the team of the four most highly paid non-CEO executives. We use the same DiD approach with identical controls as in equation (1). Table 5 reports the results. Columns (1)-(3) control for ancestry information on non-CEO executives, while columns (4)-(6) control for ancestry information on CEOs and non-CEO executives simultaneously.

As shown in Table 5, the interaction terms between Gen2-3 and any of the groups of non-CEO executives we analyze do not enter significantly. Crucially, Gen2-3 CEOs continue to be

[15] Following Kim and Lu (2016), we focus our analyses on the five highest-paid executives (based on total compensation). Next to the CEO, the group of top-five executives typically includes the Chairman, President, Chief Operating Officer (COO), CFO, and the Senior or Executive Vice President

significantly associated with higher competitive performance after we control for the ancestry information of non-CEO executives.[16] Overall, our results buttress the view that because CEOs are the most important decision-maker in a bank, their cultural heritage exerts a detectable effect on bank performance in how banks respond to a changing industry environment. No such effects are detectable for other senior executives.

3 The impact of CEO cultural values on firm performance

The previous sections show that Gen2-3 CEOs behave differently from the general population of CEOs and that this effect varies across immigrant generations. To demonstrate that the descendants-of-immigrants effects are due to culture, rather than other characteristics shared by Gen2-3 CEOs, this section traces the performance effect linked to Gen2-3 CEOs back to specific cultural values that prevail in the country of a CEOs' ancestors.

3.1 Cultural values

We obtain cultural variables from four prominent cultural databases: Hofstede, Schwartz, GLOBE and the World Value Survey. In total, we collect data for 16 cultural variables. While any selection of individual cultural variables remains arbitrary to some extent, our approach of collecting a relatively large number of cultural variables from different sources is designed to minimize the effects of arbitrary choices that are linked to any individual cultural index on our conclusions.

We start with the cultural variables identified by Geert Hofstede, because this framework has been widely applied across many disciplines. We use all six Hofstede dimensions: *Power Distance* indicates the importance of hierarchy in a culture, *Individualism vs Collectivism* reflects

[16] Of course, the cultural heritage of non-CEO executives may well shape decision-making in their particular areas of responsibilities. However, our results indicate that such effects are not traceable in aggregate firm performance.

the integration of individuals in groups, *Uncertainty Avoidance* is the extent to which individuals are not comfortable with unpredictability and ambiguity, *Masculinity vs Femininity* is describes 'tough versus tender' cultures, *Long-term vs Short-term Orientation* is related to (short term) normative versus (long term) pragmatic cultures, and *Restraint vs Indulgence* reflects the extent to which members of a society try to control their desires and impulses.

Despite its popularity, Hofstede's framework faces criticisms notably for its reliance on theoretical reasoning to construct a relatively low number of cultural dimensions (see Karolyi (2016) for a critical review of the key databases used to measure differences in cultural values). Therefore, we complement Hofstede's cultural dimensions with additional cultural variables not captured in Hofstede's framework.[17]

We first consider the cultural variables developed by Schwartz (2007), who derives three broad measures of societal traits based on extensive interviews conducted between 1988 and 2004. While many of the Schwartz spectra are similar to Hofstede's dimensions, two Schwartz variables capture additional cultural attributes which we include in our analysis: *Intellectual Autonomy vs Embeddedness* reflects the freedom to pursue own thoughts and ideas, and *Harmony vs Mastery* captures the degree to which members of a society are uncomfortable with confrontation and assertiveness.

We then add variables from the GLOBE database.[18] Since seven out of nine of GLOBE's cultural dimensions overlap with dimensions already included, we add the two dimensions that capture additional cultural attributes: *Humane-orientation,* which reflects the extent to which a

[17] In unreported tests, we also contrast cultural dimensions where Hofstede and other dimensions directly overlap and find that they explain competitive performance in a similar manner. For instance, regardless of whether we measure Uncertainty Avoidance using Hofstede or GLOBE, it is associated with higher competitive performance later on in our analysis.

[18]The project was launched in the early 1990s by Robert House, and now involves over 200 scholars from 62 countries. See https://test.uvic.ca/gustavson/globe/about/index.php.

society encourages individuals to be altruistic, generous and kind to others, and *Performance-orientation*, which reflects the extent to which a society encourages and rewards performance.

Our final source of cultural variables is the World Value Survey (WVS). There are six waves of surveys since 1981, and the most recent 2012 survey includes 258 items on various topics, including perceptions of life, work, politics and society. Given the comprehensive nature of the survey, we start with the 14 WVS items that Karolyi (2016) identifies as particularly relevant for finance research. Out of this list, we select six items that capture attributes not already captured by other cultural dimensions in our analysis: *Trust in Others, Importance of Freedom*, *Importance of Selflessness, Importance of Income Equality*, *Importance of Self-respect*, and *Patriotism.*

3.2 Cultural values and competitive performance

To examine how the 16 cultural dimensions explain competitive performance, we first scale each dimension to a range between 0 and 1. We then assign cultural values to CEOs according to their ancestral background.[19] We sequentially relate each cultural dimension to bank performance under competitive pressure by running the following model:

$$ROA_{itk} = \alpha + \beta_1 \text{Cultural dimension}_{it} * \text{Competitive state}_{tk} + \beta_2 \text{Cultural dimension}_{it} + \beta_3 \text{ Competitive state}_{tk} + \text{Controls} + \text{Fixed effects} + \varepsilon_{itk} \quad \textbf{(2)}$$

where *i* indexes bank, *t* indexes time and *k* indexes US states. We include similar controls to those in equation (1) and use State-year fixed effects in all specifications.

[19] For example, if a CEO has ancestors coming from Germany, s/he will be assigned a Power Distance score of 0.35, an Uncertainty Avoidance score of 0.65 and so on.

Table 6 sequentially displays the results for each of the 16 cultural dimensions. Each row presents the results of a regression based on a different cultural dimension. For ease of presentation, we only show the coefficients on the interaction between the cultural dimension and the state-level competition indicator (β_1) and its constituent variables (β_2, β_3). Our main coefficient of interest is β_1 which tells us how the profitability of banks with CEOs with different cultural values differs by competitive regime.

[Table 6 around here]

The results show that most (10 out of 16) of the cultural variables significantly affect competitive performance. On a broad level, this confirms our interpretation that the performance effect linked to Gen2-3 CEOs is indeed rooted in culture. More specifically, we find that competitive performance is positively related to the dimensions of *Restraint, Long-term Orientation, Uncertainty Avoidance,* and *Harmony.* In contrast, performance is negatively related to the dimensions of *Individualism, Performance-orientation, Importance of Freedom, Intellectual Autonomy, Importance of Selflessness* and *Patriotism*.

In general terms, the cultural values that enter significantly appear to broadly contrast group- vs. self-oriented cultures and cultures related to attitudes towards uncertain future outcomes. Specifically, CEOs whose ancestral origins lie in cultures that emphasize restraint, group-mindedness and long-term orientation are associated with positive performance effects while a cultural heritage that values personal freedom and tolerates uncertainty is linked to underperformance following a competitive shock.

These findings are broadly in line with the leadership and strategy literature. For instance, Den Hartog et al. (1999) conduct a large multi-country survey of middle managers to describe leader attributes and behavior that is linked to effective leadership. Their results show that

managerial attributes such as group-mindedness and foresight are widely endorsed as contributing to outstanding leadership. In contrast, short-termism is generally considered a managerial attribute that is linked to unsustainable investment behavior and poor long-term prospects (e.g., Marginson and McAulay, 2008; Porter, 1992).

The cultural dimensions that do not explain competitive performance are *Importance of Income Equality, Importance of Self-respect, Humane-orientation, Trust in Others, Power Distance,* and *Masculinity.* These dimensions mainly revolve around values reflecting hierarchy vs equality which, intuitively, should be less relevant to strategic decision-making and, by extension, firm outcomes. Consistent with this, Judge et al. (2002) conduct an extensive qualitative review and a meta-analysis of research into the personality traits of outstanding corporate leaders and do not list hierarchical attitudes as traits of effective leaders.

The effects of individual cultural values on performance are economically meaningful. For instance, a one-standard deviation increase in *Uncertainty Avoidance* increases competitive performance by 9.4%, while a one-standard deviation increase in *Individualism* decreases competitive performance by 18.3%. Interestingly, the economic magnitudes of most cultural variables are substantially larger than the descendants-of-immigrants effect (Gen2-3 CEOs) on competitive performance. Again, this confirms our interpretation that culture is the key driver behind the Gen2-3 effects.

In Section 4 below, we analyze *how* a CEO's cultural heritage affects firm policies under competitive pressure. However, given the large number of cultural variables and firm policies we analyze, demonstrating how each dimension affects a particular policy becomes a complex undertaking. Furthermore, the results in Table 6 suggest that some individual cultural dimensions cluster around more general characteristics of national cultures (e.g., whether a culture is group-

or self-oriented). Therefore, we next employ factor analysis to assign the 16 cultural variables to more general sets of cultural characteristics and analyze which sets are relevant for performance and firm policy choices.

3.3. Factor analysis: CEO factor scores and performance

Factor analysis is a popular approach to summarize multifaceted personal characteristics such as abilities or skills (e.g., Adams, Akyol and Verwijmeren, 2016; Kaplan, Klebanov, and Sorenson, 2012; Kaplan and Sorenson, 2016). Factor analysis captures the variability among the cultural variables and reduces them to a lower number of factors that describe characteristics that tend to vary together. Our analysis extracts three main factors that summarize the main dimensions across which the 16 cultural variables vary.[20]

[Table 7 around here]

Panel A of Table 7 shows the three factors and how they load on individual cultural variables. Factor 1 captures most (54%) of the variation in cultural values. Factor 1 shows high positive loadings on *Individualism, Performance-orientation,* and *Importance of Freedom* and high negative loadings on *Restraint, Long-term Orientation, Uncertainty Avoidance,* and *Harmony*.[21] Factor 1 therefore describes a person who values personal freedom and is competitive and performance-oriented (in contrast to a person who emphasizes restraint, group-mindedness and has long-term orientation).

The second and third factors have significantly lower explanatory power and account for 17% and 9% of the variation in the cultural dimensions, respectively. Factor 2 loads positively

[20] The number of factors is determined by the Kaiser criterion that retains factors with eigenvalues ≥1. In our analysis, three factors satisfy this criterion (and jointly explain around 80% of the total variance in the cultural values).

[21] In line with the literature, we focus on variables with high loadings, i.e., those that are greater than |0.3|. The interpretation of the factors remain largely unchanged when we alternate this threshold.

on *Importance of Income Equality*, *Humane-orientation,* and *Trust in Others* and negatively on *Power Distance.* As such, Factor 2 seems to contrast being equal with hierarchical values. Finally, Factor 3 loads positively on *Masculinity* and *Intellectual Autonomy*. Factor 3, thus, combines assertiveness and autonomy in thought.

Before proceeding with our analysis of how culture affects firm policies in Section 4, we first confirm that the three factors explain competitive performance in a way that is broadly consistent with the results based on the 16 individual dimensions in Table 6. We obtain the scores for each of the factor[22] and then regress these on ROA using our previous DiD approach with identical controls as in equation (1).

Panel B of Table 7 shows that Factor 1 is negatively related to performance under competitive pressure. That is, banks led by CEOs whose ancestral origins lie in cultures that value personal freedom are associated with lower performance. By the same token, this implies that CEOs whose ancestral origins lie in cultures that emphasize restraint, group-mindedness and long-term orientation are associated with positive performance effects. This is broadly consistent with the results on the individual dimensions reported in Table 6.[23] In contrast, Factors 2 and 3 are not related to competitive performance. This is also consistent with the results in Table 6 which show that many of the cultural variables embedded in Factors 2 and 3 (e.g., *Masculinity*, *Power Distance*, etc.) do not have measurable performance effects.

[22] Component scores are calculated using all of the variables with their weight based on the component loadings.
[23] Interestingly, the coefficient on Factor 1 is positive and significant. This indicates that the set of cultural values which is linked to underperformance following a competitive shock leads to outperformance in normal market times. CEOs with a high Factor 1 score are uncertainty-seeking and may therefore pursue a range of short-term expansionary corporate strategies that may well help the bank capture market shares. This is line with Pan, Siegel and Wang (2016) who show that firms whose managers have an ancestral background which scores low on Hofstede's Uncertainty Avoidance are linked to various risky outcomes.

Between them, the three factors therefore identify general characteristics of national cultures. In the next section, we use the three factors to study how culture values affect firm performance and policy choices.

4. Why cultural heritage affects performance: CEO factor scores and firm policy choices

This section sheds light on the economic mechanisms underlying our results by studying *how* CEO's cultural heritage affects firm policies under competitive pressure. We regress the factor scores estimated above on specific bank policies in the same DiD setting as before.[24] We focus on three bank policies into which CEOs have major input and which parsimoniously capture the key challenges faced by banks during an episode of deregulation: expansion via acquisitions, risk-taking, and cost-efficiency.

First, we examine how a CEO's cultural heritage affects a bank's propensity to engage in acquisitions as well as the expected performance effects of these acquisitions. For instance, banks may react to increased competition by rushing to acquire competitors, and many of these deals may turn out to be value-destroying for shareholders of the acquiring bank (e.g., Schoenberg and Reeves, 1999). We study a bank's acquisition propensity by running a regression on the number of deals announced in a given year. We study acquisition performance by estimating the cumulative abnormal returns (CARs) over a 5-day [-2, +2] event window surrounding the merger announcement.[25]

[24] For ease of reporting, we link three factors (instead of 16 individual dimensions) to competitive performance. Consistent results are obtained when using the 16 individual dimensions.

[25] We focus on M&A deals that are publicly announced between 1994 and 2006 by US banks. We obtain data on bank acquisitions from Thomson Financial's merger database (SDC). All deals must be at least $250 million and be subsequently completed. We drop all observations where there is missing data or when other major news is released on the same day. This yields a sample of 264 deals.

Second, the ability of banks to manage portfolio and financing risks effectively is an important driver of their performance. Particularly during periods of deregulation, some CEOs may pursue overly risky strategies that could lead to underperformance. We use stock return volatility as a proxy for bank risk-taking. Finally, some banks may enjoy a higher level of profitability because they cut costs when competition intensifies. To proxy for cost-efficiency, we measure a bank's total expenses scaled by income. Lower values of this ratio indicate more economical use of expenses to produce a given level of income.

Table 8 reports our results. Panel A examines acquisition propensity, Panel B acquisition performance, Panel C bank risk-taking, and Panel D cost-efficiency.

[Table 8 around here]

Our previous analysis shows that CEOs whose cultural heritage loads negatively on Factor 1 (i.e., those whose cultural heritage places emphasis on restraint, group-mindedness and long-term orientation) are linked to higher performance under increased competition. Table 8 offers some evidence that explains this result. The results show that CEOs who load negatively on Factor 1 are linked to banks that, following an increase in competitive pressures, (i) engage in fewer acquisitions[26], (ii) realize higher acquisition announcement returns, (iii) display lower volatility, and (iv) are more cost efficient. Jointly, this offers an explanation for why CEOs whose ancestral origins lie in cultures that place an emphasis on restraint, group-mindedness and long-term orientation are linked to higher performance under competitive pressure. Factors 2 and 3 do not exert a significant influence on any of the bank policy choices we analyze, which is

[26] Our finding is consistent with Pan, Siegel and Wang (2016), who find that uncertainty avoiding CEOs (which is one of the cultural dimensions underlying Factor 1) are less likely to undertake acquisitions. This finding is also related to Ahern, Daminelli and Fracassi (2015), who find that national cultural differences influence merger volume and gains in cross-border mergers.

consistent with our analysis of cultural value sets on ROA (where neither factor affects performance).

5. Alternative explanations and robustness tests

5.1. Alternative explanations based on CEO-firm matching

CEOs and firms do not match randomly. CEOs with certain desired characteristics could be strategically appointed to take firms in a direction determined by the board. If ancestry was a criterion for the appointment of a particular CEO, endogenous matching between CEOs and firms could bias our results. Our IBBEA identification partially mitigates concerns over CEO-firm matching, because banks that do not know whether and when a state would open for interstate competition cannot appoint CEOs in anticipation of this event.

To further alleviate concerns over CEO-firm matching, we conduct two additional tests. First, we split our sample into two subsamples: The first subsample contains CEOs who assume office at least three years before a state opens for competition (that is, plausibly before changes in competition could have informed CEO selection and therefore, CEO appointment is plausibly exogenous to post-deregulation performance) and the second subsample contains CEOs who assume office within three years of deregulation. If unobserved matching were to drive our results, we would expect a stronger performance effect among recently hired CEOs. As shown in Panel A of Appendix 4, the effect of CEO ancestry is similar irrespective of whether a CEO was hired within three years of deregulation.

Second, we focus on exogenous CEO turnovers[27] to identify banks that experience a shock to the ancestry of their CEO. Following Dittmar and Duchin (2016), we define CEO turnover events as exogenous if they meet one of the following conditions: the departing CEO dies, departs due to health-related reasons, is at least 60 years old, or the departure is part of a firm's succession plan (with the date of departure announced in public at least six months prior to departure). To identify exogenous turnovers, we carefully read each firm's press releases associated with the turnover events. We classify 72% of CEO turnovers in our sample as exogenous, consistent with 67% reported in Dittmar and Duchin (2016).

Panel B of Appendix 4 estimates (i) a firm fixed effects panel regression on ROA based on banks that experience exogenous CEO turnover during the sample period; and (ii) difference regressions that compare bank performance two years prior to CEO turnover and two years afterwards (ΔROA, in percentages). This empirical design allows us to exploit cross-sectional variation within the subset of exogenous CEO turnovers. In both specifications, we exclude the turnover year to mitigate the effects of potential volatility in performance surrounding the turnover. The results show that when a new Gen2-3 CEO is appointed, banks enjoy an increase in performance after a competitive shock. These results hold across both regression models and further support a causal interpretation of our results.

5.2. Omitted location and CEO variables

It is possible that our Gen2-3 variable correlates with omitted location or CEO variables. One example of an omitted location variable is that immigrants tend to settle in populous areas. If banks located in populous areas are more likely to recruit talented CEOs, our results may simply

[27] We focus on exogenous turnovers to ensure that CEO departures are not driven by poor performance or changes in firm policies. For example, if the turnover is driven by weak sales, *any* new CEO would implement the same policies to improve sales. This could add noise to our estimations.

reflect CEO talent. To address this, we control for additional location characteristics. Appendix 5 shows that our results remain robust to controlling for various location variables at the county-level:[28] Ln (population), civilian labor force, Ln (personal income), and religiosity[29].

Further, omitted CEO characteristics could equally bias our results. For instance, immigrant households tend to invest heavily in the education of their children (Portes and Rumbaut, 2001), and our results could reflect the fact that Gen2-3 CEOs have more qualifications than other CEOs. In Appendix 6, we control for various observable CEO characteristics: whether a CEO graduated from an Ivy League university, holds an MBA degree, has prior work experience as a top executive, or has lived through the Great Depression. We also control for CEO incentives: CEO ownership (the fraction of shares held by the CEO), bonus payments, and risk-taking incentives relative to pay-performance sensitivity (*vega/delta)*[30]. The results in Appendix 6 show that controlling for additional CEO characteristics does not significantly alter the coefficients on Gen2-3 CEO, suggesting that cultural heritage is orthogonal to these factors.

5.3. Legal and institutional heterogeneity in the CEO's country of origin

The key advantage of looking at Gen2-3 CEOs is that it allows us to hold constant the economic and institutional factors that all CEOs face while exploiting variation in the cultural values Gen2-

[28] Data on local religiosity is obtained from the Association of Religion Data Achieves (ARDA) and data on population and labor are from the US Census Bureau.

[29] Interestingly, our results show that banks located in more religious counties outperform under competitive pressure. This is consistent with Adhikari and Agrawal (2016) who find that banks located in religious counties tend to undertake more prudent policies. In contrast to Adhikari and Agrawal (2016) who focus on religion as a local factor external to firms, our paper mainly focuses on culture within firms by studying the ancestral backgrounds of CEOs.

[30] The sensitivity of CEO wealth to bank risk (*vega*) measures changes in CEO wealth to stock return volatility. The sensitivity of CEO wealth to bank performance (*delta*) measures changes in CEO wealth to stock price performance. We are grateful to Jeffery Coles, Naveen Daniel and Lalitha Naveen for sharing their data on CEO equity-based incentives online. Please refer to Coles, Daniel, and Naveen (2006) and Core and Guay (2002) for detailed calculation of the variables.

3 inherit from their foreign-born ancestors. However, one could argue that the omitted institutional and economic factors at the time when a CEO's ancestors immigrate to the US could drive our results. For instance, immigrants from the UK could belong to different socioeconomic strata than those from Russia (Carroll, Rhee and Rhee, 1994). To rule this out, we collect data for a CEO's ancestral country of origin (in the year 1900) on GDP per capita, life expectancy and the legal system. As shown in Appendix 7, our results remain robust to the inclusion of the country controls.

In unreported analyses, we confirm that CEOs with ancestry linked to countries with less developed capital markets (Germany, Italy, Poland, Russia) have a largely similar profile with those whose ancestry is linked to countries with more developed capital markets (UK and Ireland). Specifically, there is no statistical difference in age, tenure, education or executive experience between the two groups. Collectively, this confirms that our results are unlikely to be driven by the differences among these two groups.

5.4. Additional robustness tests

This section presents additional robustness tests. First, we mitigate concerns that IBBEA can be anticipated by examining the dynamics of bank performance surrounding deregulation. Following Bertrand and Mullainathan (2003), we decompose *Competitive state* into five dummies associated with five periods: up to and including two years before deregulation ($Before^{2+}$), one year before deregulation ($Before^{1}$), the year of deregulation (*Present*), one year post-deregulation ($After^{1}$), and two years and after post-deregulation ($After^{2+}$). As indicated in Panel A of Appendix 8, the interaction terms with $Before^{2+}$, $Before^{1}$ and *Gen2-3 CEOs* are not

significant while interaction terms with *Present, After[1] After[2]* and *Gen2-3 CEOs* are significant. This shows that the shock does not appear to have been anticipated by banks.

Second, there could be omitted factors, say macroeconomic conditions, coinciding with the timing of the shock that also affect bank performance. We address this by conducting a placebo test where we randomly (i.e., inaccurately) assign states to two competition categories. If omitted factors indeed drive our results, we should continue to find significant results even under this random assignment. As shown in Panel B of Appendix 8, the interaction term is statistically indistinguishable from zero.

Third, we use alternative performance measures. We replace ROA with returns on equity (ROE) and two market-based measures of performance: Tobin's Q and Marginal Expected Shortfall (MES)[31]. As shown in columns (1)-(3) of Appendix 9, when competition intensifies, Gen2-3 CEOs are associated with a higher ROE and Tobin's Q and a lower exposure to market downturns.

Fourth, we address concerns that our data collection process could be noisy: while we can retrieve the census records of all CEOs born before 1940, we need to infer the ancestry information of CEOs born after 1940 based on their surname and birthplace. We split the sample into two groups: CEOs born before 1940 and those born after 1940 and show in columns (4) and (5) of Appendix 9 that our results are not driven by any particular group of CEOs.

Fifth, we use an alternative definition of competitive state (*#liberalizations*), which takes into account all four regulatory barriers (instead of just two as above). As shown in column (6) of Appendix 9, our results are robust to this alternative definition of competitive pressures.

[31] Following Acharya et al (2016), we calculate MES as the average return for each bank on days when the returns of the overall financial markets are in the bottom 5% in a given year. The more negative the MES measure, the worse returns of the individual bank when the return from the overall market is low.

Sixth, we use an alternative DiD set-up. Instead of using both within- and across-state variation, we restrict identification to within-state variation in CEO heritage. That is, we restrict the sample to competitive states only and assign banks with Gen2-3 CEOs to the treatment group and those with Gen4+ CEOs to the control group. Column (7) displays our robust results.

Seventh, we test whether our results are driven by the quality of board governance. We include board size and the fraction of independent directors as additional controls. Board data are from BoardEx, Riskmetrics and Edgar DEF14A forms. Column (8) displays robust results.

Eighth, banks located in rural areas could face less competition. If rural banks were led by Gen4+ CEOs, our results may simply reflect a large profitability drop when competition erodes non-competitive rents (rather than banks led by Gen2-3 CEOs outperform). We address this by controlling for bank profitability in 1994, i.e., the year before IBBEA becomes effective, and show in column (9) that our key results remain robust.

Finally, one can argue that our measure of Gen2-3 CEOs could relate to a bank's foreign operations. Banks with a view to expand internationally could be more likely to recruit a Gen2-3 CEO. Following Berger et al. (2016), we control for a bank's foreign operations using its foreign loan ratio and foreign deposit ratio. As shown in column (10), our results remain robust.

6. Conclusions

This paper advances and tests a new hypothesis on the link between the CEO cultural heritage and firm policy choices and performance in a changing industry environment. To distinguish culture from other institutional and economic factors, we focus on US-born CEOs who are the children or grandchildren of immigrants. To establish causality, we use a quasi-natural experiment – the staggered introduction of interstate branching (IBBEA) – as a source of

exogenous variation to industry competition. Our paper offers novel evidence on whether and how CEO cultural heritage causally affects organizational-level outcomes.

We find that the cultural heritage of the CEO shapes the way a bank reacts to a changing industry environment. Banks led by a CEO with immigrant parents or grandparents are associated with higher profitability when competition intensifies. This effect is uniquely linked to the CEO and not to other senior decision-makers, such as the CFO. Further, this effect weakens over successive immigrant generations, and can be explained by specific inter-cultural differences that prevail in the country of a CEO's ancestry.

We show that banks led by CEOs whose cultural heritage emphasizing restraint, group-mindedness and long-term orientation is safer, more cost-efficient and are associated with more cautious acquisitions which, in turn, explains the outperformance. Overall, our work is consistent with the hypothesis that the culture of a CEO's ancestors influences his/her decision-making behavior, firm policy choices and performance in the present time.

REFERENCES

Acharya, V.V., Pedersen L.H., Philippon T, and Richardson M.P., 2016, 'Measuring systemic risk,' *Review of Financial Studies,* forthcoming.

Adams, R.B., Akyol, A.C., and Verwijmeren, P., 2016, 'Director skill sets', Working paper

Adams, R.B., Keloharju, M. and Knüpfer, S., 2016; 'Are CEOs born leaders? Lessons from traits of a million individuals,' Working Paper.

Adhikari, B.K., and Agrawal, A., 2016, 'Does local religiosity matter for bank risk-taking,' *Journal of Corporate Finance* 38, 272-293

Ahern, K., Daminelli, D. and Fracassi, C., 2015, 'Lost in translation? The effect of cultural values on mergers around the world,' *Journal of Financial Economics*, 117: 165–189.

Berger, A.N., Ghoul, S.E., Guedhami, O. and Roman, R.A., 2016, 'Internationalization and Bank Risk,' *Management Science,* Forthcoming.

Bernile, G., Bhagwat, V. and Rau, P.R., 2016, 'What doesn't kill you will make you more risk-loving: Early-life disasters and CEO behaviour,' *Journal of Finance,* Forthcoming.

Bertrand, M. and Mullainathan, S., 2003, 'Enjoying the quiet life? Corporate governance and managerial preferences,' *Journal of Political Economy*, 111, 1043–1075.

Bertrand, M. and Schoar, A., 2003, 'Managing with style: The effect of managers on firm policies,' *Quarterly Journal of Economics*, 118(4), 1169–1208.

Bisin, A. and Verdier, T., 2000, 'Beyond the melting pot: Cultural transmission, marriage, and the evolution of ethnic and religious traits,' *Quarterly Journal of Economics*, 115(3), 955–988.

Bisin, A. and Verdier, T., 2001, 'The economics of cultural transmission and the dynamics of preferences,' *Journal of Economic Theory*, 97, 298–319.

Carroll, C.D., Rhee, B. and Rhee, C., 1994, 'Are there cultural effects on saving? Some cross-sectional evidence,' *Quarterly Journal of Economics*, 109(3), 685–699.

Coles, J., Daniel, N. and Naveen, L., 2006, 'Managerial incentives and risk taking,' *Journal of Financial Economics*, 79, 431–468.

Core, J. and Guay, W., 2002, 'Estimating the value of employee stock option portfolios and their sensitivities to price and volatility,' *Journal of Accounting Research*, 40, 613–630

Cornaggia J., Mao, Y., Tian, X. and Wolfe, B., 2015, 'Does banking competition affect innovation?' *Journal of Financial Economics*, 115: 189–209.

Crongvist, H. and Yu, F., 2016, 'Shaped by their daughters: Executives, Female Socialization, and Corporate Social Responsibility,' *Journal of Financial Economics,* Forthcoming

Custodio, C., Ferreira, M.A., and Matos P.P., 2013, 'Generalists vs Specialists: Managerial skills and CEO pay,' *Journal of Financial Economics,* 108: 471– 492

Custodio, C. and Metzger, D., 2013, 'How do CEOs matter? The effect of industry expertise on acquisition returns,' *Review of Financial Studies*, 26: 2008–2047.

Den Hartog, D.N., House, R.J., Hanges, P.J., Ruiz-Quintanilla, S.A. and Dorfman, P.W., 1999, 'Culture specific and cross-culturally generalizable implicit leadership theories: Are attributes of charismatic/transformational leadership universally endorsed?' *The Leadership Quarterly* 102: 219-256.

Dittmar, A. and Duchin, R., 2016, 'Looking in the rear view mirror: The effect of managers' professional experience on corporate financial policy,' *Review of Financial Studies*, 29: 565-602.

Du, Q., Yu, F. and Yu, X., 2016, 'Cultural proximity and the processing of financial information,' *Journal of Financial Quantitative Analysis*, Forthcoming

Ellul, A. and Yerramilli, V., 2013, 'Strong risk controls, lower risk: Evidence from US bank holding companies,' *Journal of Finance*, 68, 1757–1803.

Fernández, R. and Fogli, A., 2009, 'Culture: An empirical investigation of beliefs, work, and fertility,' *American Economic Journal: Macroeconomics*, 1(1), 146–177.

Giavazzi, F., Petkov, I. and Schiantarelli, F., 2015, 'Culture: Persistence and evolution,' Working Paper.

Giuliano, P., 2007, 'Living arrangements in Western Europe: Does cultural origin matter?' *Journal of the European Economic Association*, 5, 927–952.
Glazer, N. and Moynihan D.P., 1963, 'Beyond the melting pot: the Negroes, Puerto Ricans, Jews, Italians, and Irish of New York City,' Cambridge, MA: MIT Press, 1970 (1963)
Gruber J., and Hungerman D.M., 2008, 'The church versus the mall: What happens when religion faces increased secular competition?' *Quarterly Journal of Economics*, 123: 831-862
Guiso, L., Sapienza, P. and Zingales, L., 2006, 'Does culture affect economic outcomes?' *Journal of Economic Perspectives*, 20(2), 23–48.
Heckman, J.J., 1979, 'Dummy endogenous variables in a simultaneous equation system,' *Econometrica***,** 46: 931–959.
Hofstede, G., Hofstede, G.J. and Minkov, M., 2010, *Cultures and organizations: software of the mind,* 3rd edition, New York: McGraw-Hill.
Johnson, C. and Rice, T., 2008, 'Assessing a decade of interstate bank branching,' *The Washington and Lee Law Review*, 65, 73–127.
Judge, T. A., Bono, J. E., Ilies, R., and Gerhardt, M. W., 2002, 'Personality and leadership: a qualitative and quantitative review,' *Journal of Applied Psychology* 87, 765–780.
Kalmijn, M., 1999, 'Father involvement in childrearing and the perceived stability of marriage,' *Journal of Marriage and Family*, 61: 409–421.
Kaplan S.N., Klebanov, M.M., and Sorensen M., 2012, 'Which CEO characteristics and abilities matter?' *Journal of Finance,* 67: 973-1007
Kaplan S.N. and Sorensen M., 2016, 'Are CEOs different? Characteristics of top managers,' Working paper
Karolyi, G.A., 2016, 'The gravity of culture for finance', *Journal of Corporate Finance,* 41, 610–625.
Kim, E.H., and Lu Y., 2016, 'Executive Suite Independence: Is It Related to Board Independence?' *Management Science*, forthcoming
Marginson, D. and McAulay, L., 2008, 'Exploring the debate on short-termism: a theoretical and empirical analysis,' *Strategic Management Journal,* 29: 273–292.
Opler, T.C. and Titman, S.D., 1994, 'Financial distress and corporate performance,' *Journal of Finance* 49, 1015-1040
Pan, Y., Siegel, S. and Wang, T.Y., 2016, 'Corporate risk culture,' Working Paper.
Pagnini, D.L. and Morgan, S.P., 1990, 'Intermarriage and social distance among US immigrants at the turn of the century,' *American Journal of Sociology*, 96: 405–432.
Petersen, M.A., 2009, 'Estimating standard errors in finance panel data sets: Comparing approaches,' *Review of Financial Studies* 22(1): 435-480
Porter, M.E., 1992, 'Capital disadvantage: America's failing capital investment system,' *Harvard Business Review* 70: 65–82.
Portes, A. and Rumbaut, R.G., 2001, *The second generation and the children of immigrants longitudinal study*, University of California Press and Russell Sage Foundation, CA: Berkeley.
Rice, T. and Strahan, P., 2010, 'Does credit competition affect small firm finance?' *Journal of Finance*, 65, 861–889.
Robalino, N., and Robson, A.J., 2013, 'Genes, Culture, and Preferences,' *Biological Theory,* 8: 151-157
Schwartz, S.H., 2007, 'Value Orientations: Measurement, Antecedents and Consequences across Nations,' in J. Jowell, C. Roberts, R. Fitzgerald, G. Eva (Eds.), *Measuring Attitudes Cross-Nationally: Lessons from the European Social Survey*. London: Sage Publishers.
Schoar, A., and Zuo, L., 2016, 'Shaped by booms and busts: How the economy impacts CEO careers and management styles' *Review of Financial Studies*, Forthcoming
Schoenberg, R. and Reeves, R., 1999, 'What determines acquisition activity within an industry?' *European Financial Management,* 17: 93-98.
Yonker, S., 2016, 'Do managers give hometown labor an edge?' Working paper

Table 1: Summary statistics

This table reports the summary statistics for various CEOs and bank variables. Panel A classifies CEOs as *Gen1*, (foreign-born CEOs), *Gen2-3*, (CEOs who are the children or grandchildren of immigrants to the US) and *Gen4+* (fourth (or higher) generation of immigrants). Panel B reports the summary statistics for other CEO and bank variables. Our sample covers all public US banks for the period of 1994–2006. Definitions of all variables are included in Appendix 2.

Panel A: CEO's immigrant generation

	N	Shares of total
Gen1	5	0.8%
Gen2-3	293	47.6%
Gen4+	317	51.6%
Total	615	100.0%

Panel B: CEO and firm characteristics

Variables	N	Mean	STD	p1	p50	p99
Dependent variables: Bank performance and policies						
ROA (%)	3060	1.110	0.681	-0.109	1.096	2.465
ROE (%)	3060	12.460	6.056	-1.555	12.850	25.520
Tobin's Q	2364	1.004	0.004	1.000	1.003	1.016
Marginal Expected Shortfall (%)	3013	-0.011	0.011	-0.042	-0.010	0.011
Expenses/Income	3060	0.758	0.085	0.562	0.758	0.987
Competitive measures						
Competitive state	3060	0.561	0.496	0.000	1.000	1.000
#liberalizations	3020	1.846	1.529	0.000	2.000	4.000
CEO cultural measures						
Harmony	3038	0.399	0.021	0.377	0.386	0.460
Restraint	3043	0.416	0.163	0.310	0.320	0.800
Uncertainty Avoidance	3047	0.539	0.171	0.290	0.460	0.950
Long-term Orientation	3047	0.403	0.222	0.240	0.260	0.830
Importance of Income Equality	2810	0.444	0.056	0.322	0.428	0.560
Power Distance	3047	0.429	0.150	0.130	0.400	0.930
Importance of Self-respect	2810	0.775	0.045	0.676	0.790	0.860
Masculinity	3047	0.598	0.125	0.100	0.620	0.790
Humane-orientation	3015	0.553	0.008	0.532	0.551	0.580
Trust in Others	2810	0.135	0.007	0.119	0.136	0.159
Individualism	3047	0.801	0.158	0.370	0.910	0.910
Importance of Selflessness	2810	0.335	0.119	0.069	0.391	0.547
Importance of Freedom	2810	0.745	0.058	0.585	0.754	0.798
Performance-orientation	3015	0.427	0.029	0.350	0.445	0.447
Patriotism	2810	0.352	0.029	0.286	0.368	0.377
Intellectual Autonomy	3038	0.430	0.013	0.386	0.430	0.453
CEO-specific measures						
Ln (CEO age)	3060	4.035	0.137	3.689	4.043	4.357
Ln (CEO tenure)	3060	1.916	0.802	0.000	2.001	3.466

Panel B: CEO and firm characteristics (cont.)

Variables	N	Mean	STD	p1	p50	p99
Depression baby	3060	0.036	0.185	0.000	0.000	1.000
Ivy League	2809	0.158	0.365	0.000	0.000	1.000
MBA	2809	0.246	0.431	0.000	0.000	1.000
Experienced executives	2809	0.208	0.406	0.000	0.000	1.000
Ln (bonus comp)	831	7.165	1.005	5.740	7.048	9.473
CEO vega/delta	785	0.301	0.252	0.000	0.253	0.993
CEO ownership	801	0.020	0.055	0.000	0.003	0.333
Bank-specific measures						
Ln (assets)	3060	14.690	1.801	12.080	14.260	19.870
Leverage	3060	0.910	0.040	0.820	0.914	0.953
Lending	3060	0.641	0.134	0.103	0.663	0.869
Deposit	3060	0.746	0.119	0.280	0.766	0.909
Stock volatility	3060	0.020	0.009	0.008	0.019	0.048
HHI	3060	0.380	0.198	0.109	0.326	1.000

Table 2: Univariate DiD test: Diagnostics and results

This table compares the characteristics of treatment banks (operating in a state that removes barriers to single branch acquisitions and/or a state-wide deposit cap on branch acquisitions) and control banks located in states that implement no such changes. Panel A shows the mean differences and the p-values in the key characteristics of treatment and control banks in the year before changes in interstate branching. Panel B shows the mean differences and their p-values in the growth rates of the key characteristics of treatment and control banks one- and two-years prior to changes in interstate branching. Definitions of all variables are included in Appendix 2.

	Treatment	**Control**	**Treatment *minus* Control**	
	Mean	Mean	Difference	p-value
Panel A: Characteristics of treatment and control banks				
ROA (%)	1.150	1.003	0.148	0.280
Gen2-3	0.340	0.424	-0.084	0.284
Ln (assets)	15.014	14.615	0.399	0.207
Leverage	0.909	0.913	-0.005	0.593
Lending	0.621	0.629	-0.008	0.679
Deposit	0.753	0.800	-0.047	0.180
Stock volatility	0.021	0.022	-0.001	0.584
HHI	0.329	0.457	-0.128	0.101
Ln (CEO age)	4.038	4.027	0.011	0.592
Ln (CEO tenure)	1.869	1.768	0.101	0.445
Panel B: Trends in performance and risk				
$\Delta ROA_{1\text{-}year}$ (%)	0.079	-0.026	0.105	0.510
$\Delta ROA_{2\text{-}year}$ (%)	-0.009	0.388	-0.397	0.383
$\Delta Leverage_{1\text{-}year}$ (%)	0.000	0.001	-0.001	0.535
$\Delta Leverage_{2\text{-}year}$ (%)	-0.003	-0.002	-0.002	0.456
ΔStock volatility$_{1\text{-}year}$ (%)	-0.071	-0.040	-0.031	0.426
ΔStock volatility$_{2\text{-}year}$ (%)	-0.110	-0.024	-0.086	0.147

Table 3: CEO cultural heritage and performance

The dependent variable is ROA. Gen2-3 is a dummy that equals 1 if the CEO is the child or grandchild of immigrants to the US. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisitions and/or a state-wide deposit cap on branch acquisitions. Columns (1) to (5) present OLS results controlling for self-selection bias by including the inverse Mills ratio from a first-stage probit regression. Column (6) replicates the model in column (1) after excluding the inverse Mills ratio. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Panel A: Interaction analyses						
	Heckman 2-stage					OLS
	(1)	(2)	(3)	(4)	(5)	(6)
Gen2-3*Competitive state	0.158***	0.160***	0.146***	0.215***	0.102**	0.155***
	(4.326)	(4.333)	(3.942)	(3.917)	(2.289)	(4.321)
Gen2-3	-0.114***	-0.103***	-0.109***	-0.059	-0.061	-0.115***
	(-3.933)	(-3.528)	(-3.691)	(-0.376)	(-1.405)	(-4.206)
Gen1*Competitive state	0.984**	1.351***	0.854*	1.117***	0.596*	0.956***
	(2.195)	(2.676)	(1.910)	(6.063)	(1.765)	(5.376)
Gen1	-0.157	-0.114	-0.114	-0.707**	-0.068	-0.129
	(-1.423)	(-1.067)	(-1.027)	(-2.087)	(-0.368)	(-0.631)
Competitive state	-30.835***	-32.762***	-28.639***	-3.031	-12.245	-27.489**
	(-3.065)	(-3.112)	(-2.750)	(-0.239)	(-1.046)	(-2.274)
Ln (assets)	0.536***	0.492***	0.546***	0.231	-0.073	0.535***
	(4.722)	(4.193)	(4.660)	(0.825)	(-0.410)	(4.274)
Ln (assets)^2	-0.015***	-0.013***	-0.015***	-0.015*	-0.003	-0.015***
	(-4.081)	(-3.469)	(-4.018)	(-1.887)	(-0.511)	(-3.928)
Leverage	-10.399***	-10.456***	-10.503***	-4.740***	-5.943***	-10.998***
	(-32.184)	(-31.924)	(-32.353)	(-9.971)	(-11.412)	(-11.910)
Lending	0.110	0.128	0.118	-0.293**	-0.028	0.135
	(0.896)	(0.978)	(0.918)	(-2.298)	(-0.180)	(1.010)
Deposit	-0.304**	-0.185	-0.250*	0.214	-0.615***	-0.311*
	(-2.125)	(-1.221)	(-1.671)	(1.469)	(-3.012)	(-1.782)
Stock volatility	-5.959***	-2.457	-3.556**	-3.495***	-8.717***	-6.503***
	(-3.986)	(-1.469)	(-2.368)	(-3.109)	(-6.018)	(-2.581)
HHI	-0.164*	0.210	-0.159	-0.442	-0.054	-0.157*
	(-1.760)	(0.247)	(-1.330)	(-1.138)	(-0.648)	(-1.778)
Ln (CEO age)	-11.372**	-13.390***	-11.410**	2.266	8.461	-5.648
	(-2.439)	(-2.752)	(-2.354)	(0.262)	(1.422)	(-1.167)
Ln (CEO age)^2	1.415**	1.661***	1.418**	-0.227	-1.053	0.697
	(2.428)	(2.732)	(2.341)	(-0.210)	(-1.415)	(1.156)
Ln (CEO tenure)	0.137**	0.128**	0.156***	-0.098**	0.007	0.109*
	(2.419)	(2.102)	(2.690)	(-2.392)	(0.122)	(1.919)
Ln (CEO tenure)^2	-0.024	-0.022	-0.030*	0.032**	0.010	-0.020
	(-1.477)	(-1.280)	(-1.810)	(1.989)	(0.573)	(-1.318)
Lambda	0.192**	0.302***	0.247***	-0.089	-0.334**	-
	(2.110)	(3.314)	(2.683)	(-0.313)	(-2.287)	-
Year FE	Yes	No	No	No	No	Yes
State FE	Yes	No	No	No	No	Yes
State-year trends FE	No	No	Yes	No	No	No
State-year FE	No	Yes	No	No	No	No
County-year FE	No	No	No	Yes	No	No
Firm FE	No	No	No	No	Yes	No
Observations	3059	3059	3059	3059	3059	3059
Panel B: H0 = Gen2-3 CEOs*Competitive state + Gen2-3 CEOs = 0						
F-test	3.58*	2.57*	6.22**	7.82**	0.94	2.88*

Table 4: Generation-of-immigrant effects

The dependent variable is ROA. Gen1 indicates CEOs who are born outside the US. Gen2/Gen3/Gen4 indicates CEOs who are second-, third- and fourth-generation immigrants. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisitions and/or a state-wide deposit cap on branch acquisitions. All models include State-year fixed effects. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Panel A: Interaction analysis				
Dependent variable: ROA				
	Gen1	Gen2	Gen3	Gen4
	(1)	(2)	(3)	(4)
Gen1*Competitive state	1.218**			
	(2.395)			
Gen1	-0.062			
	(-0.592)			
Gen2*Competitive state		0.153***		
		(3.015)		
Gen2		-0.076**		
		(-2.170)		
Gen3*Competitive state			0.113***	
			(2.704)	
Gen3			-0.032	
			(-0.965)	
Gen4*Competitive state				-0.116
				(-1.445)
Gen4				0.099
				(1.366)
Competitive state	-35.699***	-28.375***	-24.285**	-27.006**
	(-3.436)	(-2.872)	(-2.469)	(-2.498)
Lambda	0.379***	0.109*	0.148**	0.135**
	(4.254)	(1.688)	(2.246)	(2.021)
Other controls	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes
Observations	2569	2569	2569	2569
Panel B: H0 = Generation of immigrant CEOs*Competitive state + Generation of immigrant CEOs = 0				
F-test	5.40**	4.39**	9.95***	0.24

Table 5: The cultural heritage of non-CEO top executives and performance

This table tests for the cultural heritage effects of non-CEO top executives. We examine three groups of non-CEO top executives: 1) the second-highest paid executive, 2) the CFO, and 3) the team of the five highest-paid executives (less the CEO). Columns (1)-(3) only control for the cultural heritage of non-CEOs while columns (4)-(6) control for the cultural heritage of CEOs and non-CEOs. The dependent variable is ROA. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Dependent variable: ROA						
	2nd executive	CFO	Top Team	2nd executive	CFO	Top Team
	(1)	(2)	(3)	(4)	(5)	(6)
Gen2-3 2nd executive *Competitive state	-0.001			-0.046		
	(-0.008)			(-0.862)		
Gen2-3 2nd executive	-0.004			0.014		
	(-0.029)			(0.320)		
Gen2-3 CFO*Competitive state		(-0.100)			-0.050	
		-0.041			(-0.566)	
Gen2-3 CFO		(-0.058)			-0.053	
					(-0.649)	
Gen2-3 Top Team*Competitive state			-0.099			-0.158
			(-1.083)			(-1.435)
Gen2-3 Top Team			0.120			0.105
			(1.634)			(1.121)
Gen2-3 CEO*Competitive state				0.118**	0.293***	0.107**
				(2.010)	(3.023)	(2.516)
Gen2-3 CEO				-0.048	-0.332***	-0.054
				(-0.943)	(-3.639)	(-1.595)
Competitive state	-38.113	288.096	-70.932***	-19.293	40.990	-45.172**
	(-0.675)	(0.576)	(-4.967)	(-0.967)	(1.462)	(-2.389)
Lambda	-2.090	6.820	-0.084	0.635	-0.111	0.018
	(-0.711)	(0.857)	(-0.377)	(0.803)	(-0.343)	(0.588)
Gen1 controls	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2159	854	2615	1619	701	1991

Table 6: Individual cultural values and performance

This table reports the estimation results of the following regression specification:

$$ROA_{itk} = \alpha + \boldsymbol{\beta_1}\text{Cultural dimension}_{it} * \text{Competitive state}_{tk} + \boldsymbol{\beta_2}\text{Cultural dimension}_{it} + \boldsymbol{\beta_3}\text{Competitive state}_{tk} + \text{Controls} + \text{State-year FE} + \varepsilon_{itk}$$

The dependent variable is ROA. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. A total of 16 cultural dimensions are obtained from Hofstede, Schwartz, GLOBE, and WVS. We assign the values of each cultural dimension to CEOs according to their ancestral background. Definitions of cultural dimensions and all other variables are provided in Appendix 2. We sequentially display the coefficient estimates for regressions on each cultural dimension. For brevity, the table reports the coefficients on the interaction term between the cultural dimensions and competitive state (β_1) and the coefficients on its constituent variables (β_2 and β_3). All models include State-year fixed effects. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

			β_1		β_2		β_3	
	Cultural dimension:	Obs.	coefficient	(p-value)	coefficient	(p-value)	coefficient	(p-value)
1	Harmony	3,049	2.813***	(3.335)	-2.383 ***	(-3.605)	-33.689 ***	(-3.213)
2	Restraint	3,035	0.373***	(3.450)	-0.241 ***	(-2.800)	-33.167 ***	(-3.089)
3	Uncertainty Avoidance	3,039	0.357***	(3.470)	-0.225 ***	(-2.855)	-34.592 ***	(-3.231)
4	Long-term Orientation	3,039	0.236***	(2.958)	-0.186 ***	(-2.929)	-31.283 ***	(-2.921)
5	Importance of Income Equality	2,803	0.486	(1.496)	-0.370	(-1.419)	-27.221 **	(-2.486)
6	Power Distance	3,040	0.242	(1.317)	-0.067	(-0.471)	-32.138 *	(-1.719)
7	Importance of Self-respect	2,803	-0.299	(-0.704)	0.177	(0.512)	-27.824 **	(-2.568)
8	Masculinity	3,040	-0.230	(-1.598)	0.039	(0.346)	-34.755 ***	(-3.211)
9	Humane-orientation	3,007	-0.628	(-0.305)	-0.424	(-0.282)	-29.649 ***	(-2.805)
10	Trust in Others	2,803	-1.731	(-0.627)	0.275	(0.139)	-27.895 ***	(-2.586)
11	Individualism	3,039	-0.508***	(-4.487)	0.226 **	(2.556)	-38.051 ***	(-3.539)
12	Importance of Selflessness	2,803	-0.670***	(-4.542)	0.366 ***	(3.058)	-28.419 ***	(-2.641)
13	Importance of Freedom	2,803	-1.352***	(-3.949)	1.014 ***	(3.533)	-24.400 **	(-2.284)
14	Performance-orientation	3,007	-2.022***	(-3.198)	1.513 ***	(2.951)	-30.066 ***	(-2.848)
15	Patriotism	2,803	-2.093***	(-3.446)	1.487 ***	(3.150)	-24.496 **	(-2.273)
16	Intellectual Autonomy	3,049	-3.556***	(-2.766)	1.062	(1.077)	-31.568 ***	(-2.964)

Table 7: Factor analysis

Panel A presents factor loadings on three factors with eigenvalue>1 based on 16 cultural dimensions. Factor loadings greater than |0.3| are shown in bold. Panel B links each CEO's factor scores to bank performance under competitive pressure. The dependent variable is ROA. Factor 1, Factor 2, and Factor 3 are the predicted scores obtained from factor analysis. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Panel A: Factor loadings for individual cultural dimensions

	Factor 1	**Factor 2**	**Factor 3**
Eigenvalue	7.023	2.204	1.501
% explained	0.540	0.170	0.085
Cumulative % explained	0.540	0.710	0.795
Harmony	**-0.308**	0.140	0.102
Restraint	**-0.340**	-0.065	0.008
Uncertainty Avoidance	**-0.325**	-0.228	-0.008
Long-term Orientation	**-0.328**	0.189	0.083
Importance of Income Equality	-0.052	**0.485**	0.264
Power Distance	-0.233	**-0.370**	-0.222
Importance of Self-respect	0.210	0.068	-0.154
Masculinity	0.059	-0.197	**0.569**
Humane-orientation	-0.066	**0.409**	-0.290
Trust in Others	0.187	**0.408**	-0.258
Individualism	**0.329**	0.032	0.154
Importance of Selflessness	0.221	-0.231	-0.057
Importance of Freedom	**0.300**	-0.059	-0.124
Performance-orientation	**0.313**	0.080	0.137
Patriotism	0.282	-0.269	-0.149
Intellectual Autonomy	0.089	0.052	**0.532**

Panel B: Competitive pressures, factor scores, and performance

Dependent variable: ROA				
	(1)	(2)	(3)	(4)
Factor 1*Competitive state	-0.025***			-0.026***
	(-3.793)			(-3.898)
Factor 1	0.014***			0.014***
	(2.643)			(2.616)
Factor 2*Competitive state		0.015		0.016
		(1.390)		(1.497)
Factor 2		-0.014		-0.013
		(-1.642)		(-1.572)
Factor 3*Competitive state			-0.011	-0.014
			(-0.904)	(-1.157)
Factor 3			-0.008	-0.007
			(-0.848)	(-0.796)
Competitive state	-29.900***	-25.678**	-29.421***	-31.287***
	(-2.765)	(-2.361)	(-2.706)	(-2.848)
Lambda	0.301***	0.319***	0.322***	0.319***
	(3.262)	(3.448)	(3.491)	(3.429)
Other controls	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes
Observations	2799	2799	2799	2799

Table 8: Factor regressions on bank policies

This table links a CEO's cultural factor scores to bank's policy choices under competitive pressure. The dependent variables are acquisition propensity (Panel A), 5-day [2, +2] merger announcement returns (Panel B), annual stock return volatility (Panel C), and total expense scaled by total income (Panel D). Factor 1, 2 and 3 are estimated using factor analysis (in Table 7). Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Panel A: Acquisition propensity				
Dependent variable: # acquisitions announced in a given year				
	(1)	(2)	(3)	(4)
Factor 1*Competitive state	0.008**			0.008*
	(1.978)			(1.711)
Factor 1	-0.006*			-0.006
	(-1.816)			(-1.606)
Factor 2*Competitive state		0.006		0.007
		(1.162)		(1.169)
Factor 2		-0.016**		-0.016**
		(-2.213)		(-2.024)
Factor 3*Competitive state			-0.005	-0.003
			(-0.636)	(-0.321)
Factor 3			-0.001	0.001
			(-0.109)	(0.112)
Competitive state	-0.358	-3.875	-1.287	-3.207
	(-0.058)	(-0.574)	(-0.210)	(-0.434)
Lambda	-0.150	-0.252	-0.028	-0.275
	(-0.513)	(-0.827)	(-0.102)	(-0.714)
Other controls	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes
Observations	2609	2609	2609	2609
Panel B: Acquisition performance				
Dependent variable: CARs [-2, +2] %				
	(1)	(2)	(3)	(4)
Factor 1*Competitive state	-0.004**			-0.004**
	(-1.973)			(-1.976)
Factor 1	0.003*			0.003
	(1.697)			(1.578)
Factor 2*Competitive state		-0.001		-0.001
		(-0.413)		(-0.439)
Factor 2		-0.001		-0.001
		(-0.652)		(-0.501)
Factor 3*Competitive state			-0.006*	-0.005
			(-1.710)	(-1.462)
Factor 3			0.001	0.001
			(0.705)	(0.278)
Competitive state	-0.010	-0.008	-0.007	-0.009
	(-1.623)	(-1.330)	(-1.169)	(-1.331)
Deal-specific controls	Yes	Yes	Yes	Yes
Observations	239	239	239	239

Panel C: Bank risk-taking				
Dependent variable: Stock return volatility				
	(1)	(2)	(3)	(4)
Factor 1*Competitive state	0.036**			0.037**
	(2.079)			(2.111)
Factor 1	-0.014			-0.014
	(-1.000)			(-1.018)
Factor 2*Competitive state		0.019		0.021
		(0.877)		(0.959)
Factor 2		-0.015		-0.016
		(-0.810)		(-0.868)
Factor 3*Competitive state		45.858	-0.004	-0.003
		(1.356)	(-0.149)	(-0.107)
Factor 3			0.013	0.014
			(0.542)	(0.609)
Competitive state	50.105	45.858	45.359	54.279
	(1.501)	(1.356)	(1.360)	(1.639)
Lambda	0.006	0.006	0.006	0.007
	(0.016)	(0.016)	(0.016)	(0.016)
Other controls	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes
Observations	2756	2756	2756	2756
Panel D: Cost-efficiency				
Dependent variable: Expense/ Income				
	(1)	(2)	(3)	(4)
Factor 1*Competitive state	0.006***			0.006***
	(3.369)			(3.569)
Factor 1	-0.001			-0.001
	(-0.686)			(-0.682)
Factor 2*Competitive state		0.004		0.004
		(1.286)		(1.426)
Factor 2		0.001		0.001
		(0.291)		(0.285)
Factor 3*Competitive state			0.003	0.003
			(0.985)	(1.026)
Factor 3			-0.000	-0.000
			(-0.055)	(-0.061)
Competitive state	3.617	2.491	2.252	4.553
	(0.940)	(0.653)	(0.590)	(1.160)
Lambda	0.106***	0.105***	0.106***	0.106***
	(2.999)	(2.933)	(2.964)	(2.982)
Other controls	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes
Observations	2799	2799	2799	2799

Appendix 1: Interstate banking deregulation

This table shows the regulatory changes in the banking industry over the period 1994–2006. Each column represents the roadblocks that a state adopts against the IBBEA provisions. Data source: Rice and Strahan (2010).

State	Effective date	Single branch acquisition restriction	State-wide deposit cap on branch acquisition	Age restriction	De novo interstate branching restriction
Alabama	05/31/1997	Yes	30%	5	Yes
Alaska	01/01/1994	No	50%	3	Yes
Arizona	08/31/2001	No	30%	5	Yes
Arizona	09/01/1996	Yes	30%	5	Yes
Arkansas	06/01/1997	Yes	25%	5	Yes
California	09/28/1995	Yes	30%	5	Yes
Colorado	06/01/1997	Yes	25%	5	Yes
Connecticut	06/27/1995	No	30%	5	No
Delaware	09/29/1995	Yes	30%	5	Yes
Washington DC	06/13/1996	No	30%	No	No
Florida	06/01/1997	Yes	30%	3	Yes
Georgia	05/10/1997	Yes	30%	3	Yes
Georgia	06/01/1997	Yes	30%	5	Yes
Hawaii	01/01/2001	No	30%	No	No
Hawaii	06/01/1997	Yes	30%	5	Yes
Idaho	09/29/1995	Yes	No	5	Yes
Illinois	08/20/2004	No	30%	No	No
Illinois	06/01/1997	Yes	30%	5	Yes
Indiana	07/01/1998	No	30%	5	No
Indiana	06/01/1997	No	30%	No	No
Iowa	04/04/1996	Yes	15%	5	Yes
Kansas	09/29/1995	Yes	15%	5	Yes
Kentucky	03/22/2004	Yes	15%	No	Yes
Kentucky	03/17/2000	Yes	15%	No	Yes
Kentucky	06/01/1997	Yes	15%	5	Yes
Louisiana	06/01/1997	Yes	30%	5	Yes
Maine	01/01/1997	No	30%	No	No
Maryland	09/29/1995	No	30%	No	No
Massachusetts	08/02/1996	No	30%	3	No
Michigan	11/29/1995	No	No	No	No
Minnesota	06/01/1997	Yes	30%	5	Yes
Mississippi	06/01/1997	Yes	25%	5	Yes
Missouri	09/29/1995	Yes	13%	5	Yes
Montana	10/01/2001	Yes	22%	5	Yes
Montana	09/29/1995	N/A	+1% per year from 18% to 22%	4	N/A
Nebraska	05/31/1997	Yes	14%	5	Yes
Nevada	09/29/1995	Limited	30%	5	Limited
New Hampshire	01/01/2002	No	30%	No	No
New Hampshire	08/01/2000	No	30%	5	No
New Hampshire	06/01/1997	Yes	20%	5	Yes
New Jersey	04/17/1996	No	30%	No	Yes
New Mexico	06/01/1996	Yes	40%	5	Yes
New York	06/01/1997	No	30%	5	Yes
North Carolina	07/01/1995	No	30%	No	No
North Dakota	08/01/2003	No	25%	No	No

North Dakota	05/31/1997	Yes	25%	No	Yes
Ohio	05/21/1997	No	30%	No	No
Oklahoma	05/17/2000	No	20%	No	No
Oklahoma	05/31/1997	Yes	15%	5	Yes
Oregon	07/01/1997	Yes	30%	3	Yes
Pennsylvania	07/06/1995	No	30%	No	No
Rhode Island	06/20/1995	No	30%	No	No
South Carolina	07/01/1996	Yes	30%	5	Yes
South Dakota	03/09/1996	Yes	30%	5	Yes
Tennessee	03/17/2003	No	30%	3	No
Tennessee	07/01/2001	No	30%	5	No
Tennessee	05/01/1998	No	30%	5	Yes
Tennessee	06/01/1997	Yes	20%	5	Yes
Texas	09/01/1999	No	20%	No	No
Texas	08/28/1995	N/A	20%	N/A	N/A
Utah	04/30/2001	No	30%	5	No
Utah	06/01/1995	No	30%	5	Yes
Vermont	01/01/2001	No	30%	No	No
Vermont	05/30/1996	No	30%	5	Yes
Virginia	09/29/1995	No	30%	No	No
Washington	05/09/2005	No	30%	5	No
Washington	06/06/1996	Yes	30%	5	Yes
West Virginia	05/31/1997	No	25%	No	No
Wisconsin	05/01/1996	Yes	30%	5	Yes
Wyoming	05/31/1997	Yes	30%	3	Yes

Appendix 2: Variable definitions

Variable	Definition	Source
CEO's cultural heritage measures		
Gen2-3	Equals 1 if the CEO is a child or grandchild of immigrants	ancestry.com
Gen4+	Equals 1 if the CEO is a fourth or higher generation of immigrants	ancestry.com
Gen1	Equals 1 if the CEO is a foreign immigrant	ancestry.com
Gen2	Equals 1 if the CEO is a child of foreign immigrants	ancestry.com
Gen3	Equals 1 if the CEO is a grandchild of foreign immigrants	ancestry.com
Gen4	Equals 1 if the CEO is a great-grandchild of foreign immigrants	ancestry.com
Harmony	Related to the freedom to pursue own thoughts	Schwartz
Restraint	Related to the ability to control desires	Hofstede
Uncertainty Avoidance	Related to the level of stress in the face of an unknown future	Hofstede
Long-term Orientation	Related to the choice of focus for people effort	Hofstede
Importance of Income Equality	Related to the importance of income equality	WVS
Power Distance	Related to the basic problem of human inequality	Hofstede
Importance of Self-respect	Related to the importance of self-respect	WVS
Masculinity	Related to the division of emotional between gender	Hofstede
Humane-orientation	Related to the extent to which altruism and generosity is rewarded	GLOBE
Trust in Others	Related to the willingness to trust in others	WVS
Individualism	Related to the integration of individuals into group	Hofstede
Importance of Selflessness	Related to the importance of selflessness	WVS
Importance of Freedom	Related to the importance of freedom	WVS
Performance-orientation	Related to the extent to which performance is rewarded	GLOBE
Patriotism	Related to the importance of patriotism	WVS
Intellectual Autonomy	Related to the discomfort with confrontation and assertiveness	Schwartz
Bank competition measures		
Competitive state	Dummy equals 1 if a given state at any given time removes barriers to single branch acquisition and/or state-wide deposit cap on branch acquisition	Rice and Strahan (2010)
#liberalizations	Number ranges from 0 (highly regulated) to 4 (deregulated) based on regulation changes in a given state	
Before^{2+}	All years up to and including two years before the deregulation	
Before^{1}	One year prior to deregulation	
Present	The year of deregulation	
After^{1}	One year post-deregulation	
After^{2+}	Two years after the deregulation	
Bank outcomes		
ROA (%)	Earnings before interest and taxes (EBIT) divided by book value of total assets (BHCK2170)	CRSP, FR Y9-C
ROE (%)	EBIT divided by book value of total equity (BHCK3210)	CRSP, FR Y9-C
Tobin's Q	Market value of equity divided by book value of total equity (BHCK3210)	CRSP
Stock volatility	Standard deviation of a firm's stock return in a given year	CRSP
Expense/Income	Total expenses (BHCK4073+ BHCK4093) divided by total income (BHCK 4107+BHCK4079)	FR Y9-C
Marginal Expected Shortfall	The average return for each bank on days when the returns of the overall financial markets are in bottom 5% in a given year	CRSP
Other CEO characteristics		
Ln (CEO age)	Natural logarithm of the CEO age	BoardEx
Ln (CEO tenure)	Natural logarithm of the number of years the CEO has served in this position	BoardEx

Ivy League	Equals 1 if the CEO has an Ivy League education	BoardEx
MBA	Equals 1 if the CEO has an MBA degree	BoardEx
Experienced executives	Equals 1 if the CEO with previous executive appointments	BoardEx
Depression baby	Equals 1 if the CEO was born between 1920 and 1929	BoardEx
Ln (bonus comp)	Natural logarithm of the CEO bonus compensation	ExecuComp
CEO ownership	The fraction of shares owned by the CEO	ExecuComp
CEO vega	Sensitivity of CEO compensation to stock return volatility, expressed in $'1000	ExecuComp
CEO delta	Sensitivity of CEO compensation to share price, expressed in $'1000	ExecuComp
Other bank characteristics		
Ln (assets)	Natural logarithm of total assets (BHCK2170)	FR Y-9C
Leverage	Book value of liabilities divided by book value of total assets	FR Y-9C
Lending	Ratio of total loans (BHCK2122) divided by total assets	FR Y-9C
Deposits	Ratio of total deposits (BHDM6631+BHFN6631 + BHDM6636 + BHFN6636) divided by total assets	FR Y-9C
HHI	Index measuring the concentration of deposits at the state level	FR Y-9C
Foreign loans	Total foreign loans divided by total assets	FR Y-9C
Foreign deposits	Total foreign deposits divided by total assets	FR Y-9C
County-level characteristics		
Ln (population)	Natural logarithm of the county population	US Census Bureau
Civilian labor force	Fraction of the population who have jobs or are seeking jobs, are at least 16 years old, are not serving in the military and are not institutionalized	US Census Bureau
Ln (personal income)	Natural logarithm of the individual's income from wages, investment enterprises and other ventures	US Census Bureau
Religiosity	The number of religious adherents divided by the total population. Data available for 1990, 2000, 2010 and are interpolated for the remaining years.	Association of Religion Data Archive
Characteristics at origin in 1900		
Ln (GDP) at origin	Natural logarithm of GDP in the ancestral country of origin of the CEO	UN Statistics Division
Ln (life expectancy) at origin	Natural logarithm of life expectancy in the ancestral country of origin of the CEO	UN Statistics Division
Legal system at origin	Equals 1 if the CEO ancestral country of origin has a French Civil with German Civil law influence, 2 if German Civil law, 3 if Common law, 4 if Nordic law, 5 if mixed between Napoleonic law and German law	UN Statistics Division
Corporate governance measures		
Board size	The number of directors sitting on the board	BoardEx
Board independence	The fraction of non-executive directors on the board	BoardEx

Appendix 3: Probit estimates on data being available on a CEO's ancestors (first-stage Heckman results)

This table estimates the likelihood that we are able to identify a CEO's country of origin from *ancestry.com*. This analysis is estimated over a full sample of 5,636 bank-year observations from 1996 to 2004. The dependent variable equals 1 when we can retrieve data on the CEO's ancestor. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisition and/or state-wide deposit cap on branch acquisition. CEO's surname length is the length of a CEO's surname. Standard errors are double-clustered by firm and year. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Dependent variable: Equals 1 if data on the CEO's ancestor is available		
	(1)	(2)
Ln (assets)	0.116***	0.113***
	(3.014)	(2.605)
Ln (assets)^2	-0.002	-0.002
	(-1.559)	(-1.241)
Competitive state	-0.049**	0.486***
	(-2.042)	(14.656)
Leverage	0.041	0.067
	(0.283)	(0.482)
Lending	-0.102**	-0.070
	(-2.233)	(-1.372)
Deposit	0.318***	0.332***
	(4.899)	(4.581)
HHI	0.059	1.349***
	(1.416)	(53.368)
Stock volatility	0.389	0.534
	(0.632)	(0.699)
Ln (CEO age)	-12.994***	-12.866***
	(-8.257)	(-7.277)
Ln (CEO age)^2	1.635***	1.619***
	(8.402)	(7.406)
Ln (CEO tenure)	0.079***	0.111***
	(3.150)	(3.816)
Ln (CEO tenure)^2	-0.010	-0.016**
	(-1.353)	(-2.022)
CEO's surname length	0.029***	0.028***
	(9.220)	(8.039)
Year FE	Yes	No
State FE	Yes	No
State-year FE	No	Yes
Observations	5649	5649

Appendix 4: Does endogenous CEO-firm matching drive our results?

This table reports various tests to address concerns about endogenous CEO-firm matching. Panel A tests whether our results are driven by CEOs who have been appointed closer to deregulation. Column (1) includes firm-year observations where the CEO assumes office at least three years before a state opens for deregulation. Column (2) includes firm-year observations where the CEO assumes office within three years of deregulation. Panel B evaluates bank performance around exogenous CEO turnover events (arising from CEO death, illness or long-planned retirements). Column (1) reports a bank fixed effects panel regressions on ROA and Column (2) reports difference regressions on performance differences (ΔROA, in percentages). Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Panel A: Are our results driven by CEOs appointed closer to deregulation?		
	Tenure before deregulation >= 3	Tenure before deregulation < 3
	(1)	(2)
Gen2-3*Competitive state	0.264***	0.204***
	(5.155)	(3.758)
Gen2-3	-0.158***	-0.122***
	(-4.153)	(-2.658)
Competitive state	16.890	-30.593*
	(1.029)	(-1.731)
Lambda	-0.059	0.452***
	(-0.595)	(4.319)
Gen1 controls	Yes	Yes
Other controls	Yes	Yes
State-year FE	Yes	Yes
Observations	1,503	1,503
Panel B: Exogenous CEO turnovers		
	ROA	ΔROA
	(1)	(2)
Gen2-3*Competitive state	0.282**	1.093***
	(2.426)	(2.668)
Gen2-3	-0.224**	-1.271***
	(-2.207)	(-3.582)
Competitive state	-11.414	-47.839
	(-0.376)	(-0.428)
Lambda	-0.231	-1.275
	(-1.008)	(-1.554)
Gen1 controls	Yes	Yes
Other controls	Yes	Yes
Firm FE	Yes	Yes
Observations	523	520

Appendix 5: Controlling for additional county characteristics

This table reports estimation results that control for additional county-level controls: *Ln (population),* the natural logarithm of the county population; *Civilian labor force*, the fraction of the population who have jobs or are seeking jobs, are at least 16 years old, are not serving in the military and are not institutionalized; *Ln (personal income),* the natural logarithm of the individual's income from wages, investment enterprises and other ventures; and *Religiosity,* the number of religious adherents divided by the total population. Data on religiosity are available for 1990, 2000, 2010 and are interpolated for the remaining years. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisition and/or state-wide deposit cap on branch acquisition. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Dependent variable: ROA		
	(1)	(2)
Gen2-3*Competitive state	0.147***	0.161***
	(3.864)	(4.226)
Gen2-3	-0.093***	-0.105***
	(-3.104)	(-3.519)
Ln (population)*Competitive state	-0.117	-0.134*
	(-1.524)	(-1.739)
Ln (population)	0.159**	0.175**
	(2.089)	(2.290)
Civilian labor force*Competitive state	0.530	0.635
	(1.092)	(1.302)
Civilian labor force	-0.099	-0.137
	(-0.255)	(-0.352)
Ln (personal income)*Competitive state	0.018	0.025
	(1.058)	(1.439)
Ln (personal income)	-0.029**	-0.031**
	(-2.203)	(-2.309)
Religiosity*Competitive state	1.580	0.510***
	(0.973)	(2.782)
Religiosity		-0.309*
		(-1.916)
Competitive state	1.580	1.546
	(0.973)	(0.942)
Lambda	0.313***	0.346***
	(3.410)	(3.714)
Gen1 controls	Yes	Yes
Other controls	Yes	Yes
State-year FE	Yes	Yes
Observations	2983	2946

Appendix 6: Controlling for additional CEO characteristics

This table reports estimation results that control for additional CEO characteristics. Column (1) controls for observable CEO characteristics: *Ivy League* indicates CEOs who graduated from an Ivy League institution; *MBA* indicates CEOs with an MBA degree; *Experienced executives* indicates CEOs with prior experience as a top executive; and *Depression baby* indicates CEO born between 1920 and 1929. Columns (2) controls for CEO pay incentives: *ln(bonus comp)*, the natural logarithm of the CEO bonus compensation; *CEO ownership*, the fraction of shares owned by the CEO; *CEO vega/ CEO delta*, CEO's risk-taking incentives relative to pay-performance sensitivity. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisitions and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. All models include State-year fixed effects. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Dependent variable: ROA		
	(1)	(2)
Gen2-3*Competitive state	0.126***	0.135*
	(3.296)	(1.954)
Gen2-3	-0.107***	-0.072
	(-3.458)	(-1.393)
Ivy League*Competitive state	-0.069	
	(-1.303)	
Ivy League	0.102**	
	(2.487)	
MBA*Competitive state	0.170***	
	(3.833)	
MBA	-0.102***	
	(-2.817)	
Experienced executives*Competitive state	-0.054	
	(-1.251)	
Experienced executives	-0.117***	
	(-3.598)	
Depression baby*Competitive state	-0.027	
	(-0.231)	
Depression baby	-0.119	
	(-1.293)	
Ln (bonus comp)*Competitive state		-0.314***
		(-5.534)
Ln (bonus comp)		0.478***
		(10.445)
CEO ownership*Competitive state		-0.808***
		(-4.765)
CEO ownership		0.270**
		(1.986)
CEO vega/delta*Competitive state		-0.456
		(-0.586)
CEO vega/delta		-0.014
		(-0.021)
Competitive state	1.209	-9.798**
	(0.828)	(-2.438)
Lambda	0.277***	0.082
	(3.413)	(0.700)
Gen1 controls	Yes	Yes
Other controls	Yes	Yes
State-year FE	Yes	Yes
Observations	2808	784

Appendix 7: Economic development and institutional quality in the CEO's country of origin

This table reports estimation results that control for the economic development and quality of institutions of the CEO's ancestral country of origin, measured in 1900 terms. *Ln (GDP) at origin* is the natural logarithm of GDP in the ancestral country of origin of the CEO; *Ln (life expectancy) at origin* is the natural logarithm of life expectancy in the ancestral country of origin of the CEO; *Legal system at origin* is equals 1 if the CEO ancestral country of origin has a French Civil with German Civil law influence, 2 if German Civil law, 3 if Common law, 4 if Nordic law, 5 if mixed between Napoleonic law and German law. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisitiosn and/or state-wide deposit cap on branch acquisitions. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Dependent variable: ROA	
	(1)
Gen2-3*Competitive state	0.121**
	(2.444)
Gen2-3	-0.086**
	(-2.223)
Ln (GDP) at origin*Competitive state	-0.003
	(-0.024)
Ln (GDP) at origin	0.109
	(1.219)
Ln (life expectancy) at origin*Competitive state	-0.390
	(-1.410)
Ln (life expectancy) at origin	-0.122
	(-0.567)
Legal system at origin*Competitive state	0.045*
	(1.802)
Legal system at origin	-0.008
	(-0.431)
Competitive state	1.310
	(0.816)
Lambda	0.160*
	(1.739)
Gen1 controls	Yes
Other controls	Yes
State-year FE	Yes
Observations	2888

Appendix 8: The dynamics of bank profitability during deregulation

This table provides additional evidence on the validity of our shock. Panel A tests the dynamics of bank profitability during deregulation by replacing the competitive state dummy with a set of dummies around the year in which the state removes barriers to interstate branching. Panel B displays a placebo test where we inaccurately assign states into two competitive categories. All models include State-year fixed effects. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisition and/or state-wide deposit cap on branch acquisition. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

Panel A: Dynamics of bank profitability		
Dependent variable: ROA		
	(1)	(2)
$Before^{2+}$*Gen2-3	0.031	0.062
	(0.455)	(0.857)
$Before^{1}$*Gen2-3	-0.001	0.084
	(-0.009)	(0.809)
Present*Gen2-3	0.135	0.173*
	(1.502)	(1.780)
$After^{1}$*Gen2-3	0.140*	0.127
	(1.762)	(1.527)
$After^{2+}$*Gen2-3	0.192***	0.200***
	(4.383)	(4.667)
Gen2-3	-0.135***	0.062
	(-3.868)	(0.857)
$Before^{2+}$	0.247	-0.137***
	(1.006)	(-4.011)
$Before^{1}$	0.304	0.038
	(1.229)	(0.123)
Present	0.127	0.075
	(0.471)	(0.242)
$After^{1}$	0.071	0.745
	(0.265)	(0.550)
$After^{2+}$	-0.017	0.789
	(-0.063)	(0.580)
Lambda	0.161*	0.275***
	(1.754)	(3.013)
Gen1 controls	Yes	Yes
Other controls	Yes	Yes
Year FE	Yes	No
State FE	Yes	No
State-year FE	No	Yes
Observations	3065	3065

Panel B: Placebo checks	
Dependent variable: ROA	
	(1)
Gen2-3*Competitive state	0.041
	(1.137)
Gen2-3	-0.038
	(-1.573)
Competitive state	18.349*
	(1.696)
Gen1 controls	Yes
Other controls	Yes
State-year FE	Yes
Observations	3018

Appendix 9: Alternative regression specifications: performance, industry competition, empirical model

This table reports alternative regression specifications. Columns (1), (2), (3) use alternative performance measures as dependent variables: ROE (%), Tobin's Q and MES. Columns (4) and (5) test whether our results are driven by the data collection process, Column (4) includes observations where the CEO is born before 1940 while column (5) includes observations where the CEO is born after 1940. Column (6) uses an alternative measure of industry competition: *#relaxations*, the number of relaxations (as opposed to barriers) the state adopts towards interstate branching. Column (7) only considers banks operating in competitive states where banks with Gen2-3 CEOs are assigned to the treatment group and those with Gen4+ are assigned to the control group. Column (8) includes two additional board characteristics: *board size,* the total number of directors on the board; and *board independence*, the fraction of non-executive directors on the board. Columns (9) controls for *ROA in 1994*, which is the performance of the bank at the beginning of the sample period. Column (10) controls for *foreign loans*, which is total foreign loans divided by total assets; and *foreign deposits*, which is total foreign deposits divided by total assets. Competitive state is a dummy that equals 1 if a given state at any given time removes barriers to single branch acquisition and/or state-wide deposit cap on branch acquisition. Standard errors are double-clustered by firm and year. The sample covers the period 1994–2006. Definitions of other variables are provided in Appendix 2. *t-Statistics* are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% level, respectively.

	ROE (%)	Tobin's Q	MES	CEO birth year <=1940	CEO birth year >1940
	(1)	(2)	(3)	(4)	(5)
Gen2-3*Competitive state	2.203***	0.498***	-0.127*	0.280***	0.200***
	(4.712)	(4.609)	(-1.893)	(3.748)	(4.372)
Gen2-3	-1.644***	-0.347***	0.030	0.172	-0.130***
	(-4.461)	(-3.883)	(0.560)	(0.829)	(-3.456)
Competitive state	-14.047	-16.363***	7.830***	-0.363	-2.299
	(-0.805)	(-3.807)	(3.155)	(-0.102)	(-1.284)
Lambda	1.383	1.114***	0.576***	-0.152	0.388***
	(1.256)	(2.788)	(3.242)	(-0.894)	(4.228)
Gen1 controls	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes	Yes
Observations	3059	2363	3012	828	2231

	All relaxations	Within-state only	Add board controls	ROA in 1994	Add foreign controls
	(6)	(7)	(8)	(9)	(10)
Gen2-3*Competitive state	0.041***	0.180***	0.213***	0.164***	0.148***
	(-3.337)	(2.627)	(4.784)	(4.343)	(4.296)
Gen2-3	-0.055**	-0.112*	-0.132***	-0.063**	-0.095***
	(1.995)	(-1.766)	(-3.565)	(-2.055)	(-3.514)
Competitive state	0.072	-18.053	0.892	-20.465**	0.016
	(0.183)	(-0.732)	(0.533)	(-2.098)	(0.011)
Lambda	0.281***	0.598***	0.224**	0.047	0.155*
	(3.078)	(3.711)	(2.280)	(0.591)	(1.901)
Gen1 controls	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes
State-year FE	Yes	Yes	Yes	Yes	Yes
Observations	3066	2012	2409	2374	3025